Vol. 1098 Number 4

OFFICIAL GAZETTE

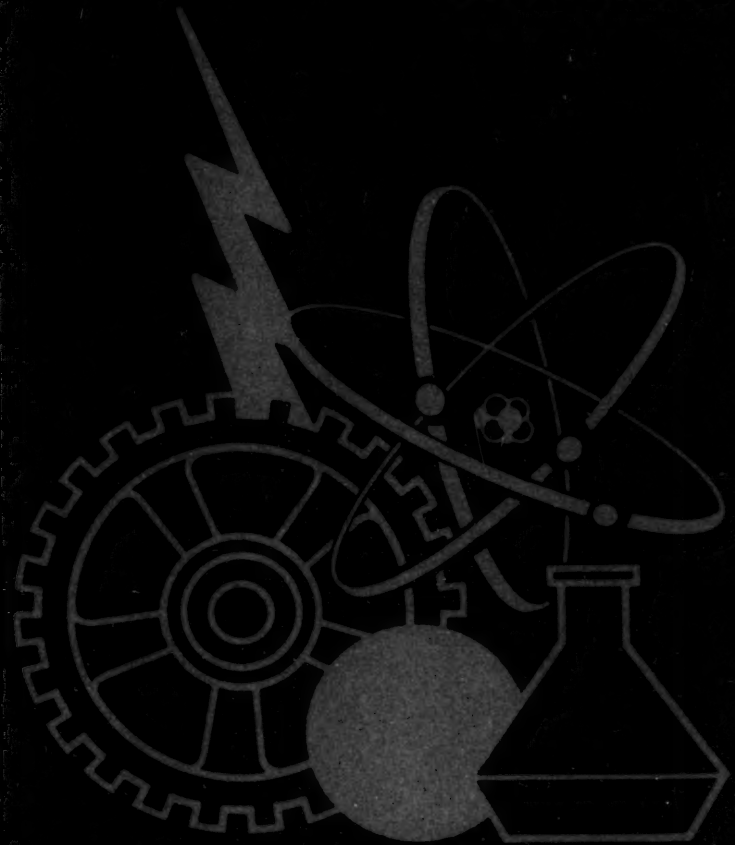
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

January 24, 1989



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.50 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

Oct. 26, 1988.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct.

5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 21, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,564,956 through 4,566,135
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 19, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,310,925 through 4,312,075
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 6, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,480,350	06/483,038	11/6/84
4,480,352	06/472,938	11/6/84
4,480,358	06/446,587	11/6/84
4,480,359	06/454,322	11/6/84
4,480,364	06/519,823	11/6/84
4,480,373	06/423,655	11/6/84
4,480,382	06/401,313	11/6/84
4,480,384	06/351,098	11/6/84
4,480,387	06/341,783	11/6/84
4,480,388	06/490,561	11/6/84
4,480,389	06/512,903	11/6/84
4,480,395	06/440,836	11/6/84
4,480,397	06/503,863	11/6/84
4,480,400	06/503,785	11/6/84
4,480,401	06/460,896	11/6/84
4,480,402	06/300,614	11/6/84
4,480,403	06/518,198	11/6/84
4,480,405	06/394,931	11/6/84
4,480,410	06/418,280	11/6/84
4,480,415	06/389,488	11/6/84
4,480,416	06/437,462	11/6/84
4,480,417	06/289,144	11/6/84
4,480,421	06/349,528	11/6/84
4,480,429	06/476,590	11/6/84
4,480,430	06/447,982	11/6/84
4,480,431	06/513,002	11/6/84
4,480,435	06/452,723	11/6/84
4,480,454	06/363,479	11/6/84
4,480,458	06/514,392	11/6/84
4,480,463	06/359,913	11/6/84
4,480,470	06/383,716	11/6/84
4,480,471	06/368,766	11/6/84
4,480,474	06/448,825	11/6/84
4,480,477	06/387,148	11/6/84
4,480,481	06/468,462	11/6/84
4,480,488	06/466,941	11/6/84
4,480,489	06/327,980	11/6/84
4,480,496	06/443,201	11/6/84
4,480,498	06/527,193	11/6/84
4,480,509	06/478,966	11/6/84
4,480,512	06/558,098	11/6/84
4,480,520	06/460,281	11/6/84
4,480,529	06/289,206	11/6/84
4,480,532	06/338,741	11/6/84
4,480,550	06/402,010	11/6/84
4,480,551	06/502,403	11/6/84
4,480,553	06/413,409	11/6/84
4,480,572	06/419,527	11/6/84
4,480,574	06/403,574	11/6/84
4,480,576	06/468,390	11/6/84
4,480,578	06/419,088	11/6/84
4,480,589	06/488,988	11/6/84
4,480,591	06/463,127	11/6/84
4,480,593	06/396,648	11/6/84
4,480,598	06/534,316	11/6/84
4,480,607	06/519,018	11/6/84
4,480,622	06/534,409	11/6/84
4,480,626	06/436,071	11/6/84
4,480,629	06/523,667	11/6/84
4,480,630	06/357,100	11/6/84
4,480,633	06/385,762	11/6/84

Patent Number	Serial Number	Issue Date
4,480,634	06/485,397	11/6/84
4,480,635	06/464,016	11/6/84
4,480,637	06/482,405	11/6/84
4,480,645	06/443,648	11/6/84
4,480,646	06/329,223	11/6/84
4,480,647	06/507,176	11/6/84
4,480,648	06/507,290	11/6/84
4,480,653	06/407,336	11/6/84
4,480,657	06/311,866	11/6/84
4,480,660	06/400,961	11/6/84
4,480,662	06/382,607	11/6/84
4,480,668	06/447,686	11/6/84
4,480,670	06/221,148	11/6/84
4,480,680	06/520,749	11/6/84
4,480,681	06/412,491	11/6/84
4,480,683	06/289,512	11/6/84
4,480,685	06/334,245	11/6/84
4,480,688	06/446,096	11/6/84
4,480,708	06/447,666	11/6/84
4,480,710	06/430,013	11/6/84
4,480,717	06/448,898	11/6/84
4,480,719	06/408,801	11/6/84
4,480,722	06/388,317	11/6/84
4,480,723	06/360,784	11/6/84
4,480,727	06/403,498	11/6/84
4,480,737	06/462,463	11/6/84
4,480,739	06/472,873	11/6/84
4,480,745	06/484,684	11/6/84
4,480,749	06/498,280	11/6/84
4,480,754	06/447,767	11/6/84
4,480,757	06/343,717	11/6/84
4,480,760	06/484,636	11/6/84
4,480,761	06/513,909	11/6/84
4,480,767	06/353,784	11/6/84
4,480,773	06/410,821	11/6/84
4,480,776	06/530,543	11/6/84
4,480,784	06/500,999	11/6/84
4,480,786	06/494,903	11/6/84
4,480,795	06/364,982	11/6/84
4,480,802	06/397,869	11/6/84
4,480,805	06/474,660	11/6/84
4,480,810	06/453,717	11/6/84
4,480,811	06/525,969	11/6/84
4,480,819	06/391,293	11/6/84
4,480,822	06/386,347	11/6/84
4,480,823	06/429,608	11/6/84
4,480,828	06/376,249	11/6/84
4,480,835	06/471,329	11/6/84
4,480,837	06/461,121	11/6/84
4,480,839	06/396,493	11/6/84
4,480,843	06/541,169	11/6/84
4,480,845	06/455,012	11/6/84
4,480,851	06/422,888	11/6/84
4,480,861	06/341,916	11/6/84
4,480,867	06/457,726	11/6/84
4,480,869	06/347,039	11/6/84
4,480,872	06/230,011	11/6/84
4,480,879	06/405,436	11/6/84
4,480,901	06/420,854	11/6/84
4,480,914	06/417,819	11/6/84
4,480,924	06/494,347	11/6/84
4,480,926	06/494,174	11/6/84
4,480,937	06/412,986	11/6/84
4,480,944	06/511,539	11/6/84
4,480,954	06/293,204	11/6/84
4,480,955	06/432,949	11/6/84
4,480,958	06/465,213	11/6/84
4,480,984	06/530,456	11/6/84
4,480,989	06/518,186	11/6/84
4,480,993	06/469,052	11/6/84
4,481,002	06/434,343	11/6/84
4,481,019	06/267,378	11/6/84
4,481,048	06/345,460	11/6/84
4,481,064	06/450,065	11/6/84
4,481,082	06/440,783	11/6/84
4,481,090	06/573,252	11/6/84
4,481,092	06/502,384	11/6/84
4,481,121	06/617,141	11/6/84
4,481,130	06/386,111	11/6/84
4,481,137	06/467,840	11/6/84
4,481,151	06/415,422	11/6/84
4,481,156	06/504,732	11/6/84
4,481,165	06/399,934	11/6/84
4,481,168	06/468,982	11/6/84
4,481,213	06/398,553	11/6/84
4,481,225	06/556,694	11/6/84
4,481,228	06/367,884	11/6/84
4,481,239	06/520,162	11/6/84
4,481,245	06/435,973	11/6/84
4,481,249	06/507,873	11/6/84
4,481,252	06/442,993	11/6/84
4,481,256	06/492,547	11/6/84
4,481,259	06/539,627	11/6/84
4,481,265	06/502,086	11/6/84
4,481,297	06/377,764	11/6/84
4,481,298	06/351,153	11/6/84
4,481,308	06/491,308	11/6/84
4,481,312	06/362,093	11/6/84
4,481,346	06/510,831	11/6/84
4,481,356	06/372,777	11/6/84
4,481,365	06/433,923	11/6/84
4,481,371	06/517,531	11/6/84
4,481,376	06/465,292	11/6/84
4,481,378	06/403,846	11/6/84
4,481,388	06/469,192	11/6/84
4,481,395	06/416,982	11/6/84
4,481,399	06/406,332	11/6/84
4,481,402	06/424,145	11/6/84
4,481,410	06/536,316	11/6/84
4,481,437	06/500,317	11/6/84
4,481,444	06/247,452	11/6/84
4,481,447	06/390,107	11/6/84
4,481,468	06/363,525	11/6/84
4,481,470	06/287,966	11/6/84
4,481,474	06/312,986	11/6/84
4,481,476	06/304,399	11/6/84
4,481,479	06/298,777	11/6/84
4,481,482	06/258,809	11/6/84
4,481,500	06/326,068	11/6/84
4,481,501	06/228,651	11/6/84
4,481,504	06/321,600	11/6/84
4,481,505	06/341,278	11/6/84
4,481,509	06/512,569	11/6/84
4,481,514	06/356,428	11/6/84
4,481,536	06/382,236	11/6/84
4,481,541	06/464,374	11/6/84
4,481,545	06/416,583	11/6/84
4,481,548	06/531,184	11/6/84
4,481,561	06/462,786	11/6/84
4,481,562	06/479,825	11/6/84
4,481,569	06/391,515	11/6/84
4,481,585	06/289,464	11/6/84
4,481,614	06/366,644	11/6/84
4,481,619	06/347,333	11/6/84
4,481,632	06/409,711	11/6/84
4,481,636	06/471,124	11/6/84
4,481,638	06/357,823	11/6/84
4,481,639	06/467,516	11/6/84
4,481,649	06/355,146	11/6/84
4,481,651	06/421,284	11/6/84
4,481,658	06/378,571	11/6/84
4,481,659	06/348,085	11/6/84
4,481,663	06/494,137	11/6/84
4,481,667	06/332,663	11/6/84

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,611,099, Re. S.N. 276,426, Filed Nov. 23, 1988, Cl. 379/24, CABLE ANALYZER WITH D.C. FUNCTIONS, Jimmy C. Ray, Owner of Record: *Communica-*

tions Technology Corp., Dallas, Tex., Attorney or Agent: Carl A. Rankin, Ex. Gp.: 261

4,658,828, Re. S.N. 276,431, Filed Nov. 22, 1988, Cl. 128/660, APPARATUS FOR EXAMINING AND LOCALIZING TUMORS USING ULTRA SOUNDS COMPRISING A DEVICE FOR LOCALIZED HYPERTHERMIA TREATMENT, Jacques Dory, Owner of Record: *Inventor,* Attorney or Agent: William Drucker, Ex. Gp.: 335

4,724,318, Re. S.N. 273,354, Filed Nov. 16, 1988, Cl. 250/306, ATOMIC FORCE MICROSCOPE AND METHOD FOR IMAGINE SURFACES WITH ATOMIC RESOLUTION, Gerd K. Binnig, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Henry E. Otto, Jr., Ex. Gp.: 256

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,780,189, Reexam. No. 90/001,661, Requested: Dec. 8, 1988, Cl. 426/477, SWEETENING COMPOSITIONS AND METHOD FOR USE THEREIN, Don Scott, Owner of Record: *Nutra Sweet Co., Deerfield, Ill.,* Attorney or Agent: John Sanders, Ex. Gp.: 130, Requester: Holland Sweetner Co.

4,369,850, Reexam. No. 90/001,663, Requested: Dec. 12, 1988, Cl. 175/393.000, HIGH PRESSURE FLUID JET CUTTING AND DRILLING APPARATUS, Clark R. Barker, Owner of Record: *Curators of the University of Missouri, Columbia, Mo.,* Attorney or Agent: Ray E. Snyder, Ex. Gp.: 350, Requester: Valley Systems Inc., Canal Fulton, Ohio

4,719,920, Reexam. No. 90/001,662, Requested: Dec. 8, 1988, Cl. 128/419.0 PG, EXERCISE RESPONSIVE RATE-ADAPTIVE CARDIAC PACEMAKER, Richard Alt, et al., Owner of Record: *Intermedics Inc., Angleton, Tex.,* Attorney or Agent: Richard J. Egan, Ex. Gp.: 330, Requester: Cook Pacemaker Corp., Leechburg, Pa.

Patent Terms Extended Under 35 USC 156

Certificates extending the terms of the following patents were issued on Dec. 28, 1988.

Reissue Patent Re. 30,910, granted Apr. 20, 1982 to Alan H. Weigand, Owner of Record: Ciba-Geigy Corp., Title: REDUCING CHOLESTEROL LEVELS, Classification: 514–182, Product Trade Name: Deursil, Term Extended: 2 years

Patent No. 3,896,145, granted July 22, 1975 to Leo Berger, et al., Owner of Record: Hoffmann-La Roche Inc., Title: CARBAZOLES, Classification: 548–444, Product Trade Name: Rimadyl, Term Extended: 2 years

Patent No. 4,071,536, granted Jan. 31, 1978 to Kevin D. Barrow, et al., Owner of Record: Beecham Group p.l.c., Title: ANTIBIOTICS, Classification: 549–414, Product Trade Name: Bactroban, Term Extended: 2 years

Patent No. 4,278,689, granted July 14, 1981 to Keith C. Murdock, et al., Owner of Record: American Cyanamid Co., Title: 1,4-BIS(SUBSTITUTED-AMINO) - 5, 8 - DIHYDROXYANTHRAQUINONES AND LEUCO BASES THEREOF, Classification: 514–656, Product Trade Name: Novantrone, Term Extended: 2 years

Patent No. 4,284,647, granted Aug. 18, 1981 to Saul W. Brusilow, et al., Owner of Record: The John Hopkins University, Title: PROCESS FOR WASTE NITROGEN REMOVAL, Classification: 514–568, Product Trade Name: Ucephan, Term Extended: 2 years

Patent No. 4,298,607, granted Nov. 3, 1981 to Hideaki Natsugari, et al., Owner of Record: Takeda Chemical Industries, Ltd., Title: CRYSTALLINE SALT OF 7B-[2-AMINOTHIAZOL-4-YL)-(Z)-2-METHOWY-IMINOACETAMIDO] - 3 - [(1-METHYL-1H-TETRAZOL - 5 - YL)THIOMETHYL]CEPH - 3-EM - 4-CARBOXYLIC ACID AND HCL OR HBR, Classification: 514–206, Product Trade Name: Cefmax, Term Extended: 2 years

Patent No. 4,313,951, granted Feb. 2, 1982 to George Y. Lesher, et al., Owner of Record: Sterling Drug Inc., Title: 3-SUBSTITUTED-6-(LOWER-ALKYL)-5-(PYRIDINYL)-2-(1H)-PYRIDINONES, THEIR CARDIOTONIC USE AND INTERMEDIATES THEREOF, Classification: 514–334, Product Trade Name: Corotrope, Term Extended: 2 years

Patent No. 4,314,081, granted Feb. 2, 1982 to Bryan B. Molloy, et al., Owner of Record: Eli Lilly and Co., Title: ARYLOXYPHENYLPROPYLAMINES, Classification 564–347, Product Trade Name: Prozac, Term Extended: 2 years

Patent No. 4,358,449, granted Nov. 9, 1982 to Jan Heeres, et al., Owner of Record: Janssen Pharmaceutica N.V., Title: 1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES AND COMPOSITIONS, Classification: 514–236.2, Product Trade Name: Terazol, Term Extended: 2 years

Patent No. 4,360,511, granted Nov. 23, 1982 to Ronald M. Baldwin, et al., Owner of Record: Medi-Physics, Inc., Title: AMINES USEFUL AS BRAIN IMAGING AGENTS, Classification: 424–1.1, Product Trade Name: Spectamine, Term Extended: 2 years

Patent No. 4,374,829, granted Feb. 22, 1983 to Elbert E. Harris, et al., Owner of Record: Merck & Co., Inc., Title: AMINOACID DERIVATIVES AS ANTIHYPERTENSIVES, Classification: 514–21, Product Trade Name: Prinivil, Term Extended: 676 days

PATENT NOTICES

Certificates of Correction for the Week of Jan. 17, 1989

Re. 32,475	4,717,760	4,750,079	4,764,199
Re. 32,742	4,718,025	4,750,892	4,765,379
D. 297,452	4,720,677	4,752,078	4,765,764
4,486,118	4,720,716	4,752,375	4,766,025
4,516,330	4,720,912	4,752,445	4,766,030
4,529,669	4,721,952	4,752,488	4,766,147
4,550,584	4,722,003	4,753,304	4,766,216
4,580,407	4,723,173	4,753,845	4,766,228
4,610,382	4,725,663	4,754,600	4,766,594
4,618,813	4,726,891	4,754,805	4,766,761
4,620,238	4,727,549	4,755,013	4,767,071
4,622,422	4,729,440	4,755,174	4,767,085
4,623,786	4,729,577	4,755,947	4,767,152
4,633,315	4,729,919	4,756,044	4,767,205
4,638,741	4,732,727	4,756,341	4,767,206
4,639,602	4,733,591	4,757,002	4,767,212
4,644,670	4,734,334	4,757,042	4,767,314
4,651,688	4,735,702	4,757,485	4,767,383
4,652,122	4,735,788	4,757,573	4,767,776
4,660,214	4,736,770	4,758,097	4,767,891
4,661,916	4,736,793	4,758,340	4,768,008
4,664,599	4,737,432	4,758,608	4,768,409
4,670,540	4,738,811	4,759,805	4,768,468
4,673,213	4,739,420	4,759,944	4,768,675
4,675,424	4,740,440	4,760,051	4,768,695
4,681,610	4,742,070	4,760,060	4,768,947
4,684,942	4,743,154	4,760,119	4,769,348
4,685,398	4,743,493	4,760,142	4,769,371
4,688,972	4,743,660	4,760,524	4,769,601
4,691,171	4,744,679	4,760,820	4,769,607
4,698,496	4,744,732	4,761,220	4,769,942
4,699,624	4,744,828	4,761,394	4,770,061
4,700,966	4,745,414	4,761,506	4,770,103
4,701,671	4,746,632	4,761,676	4,770,387
4,703,864	4,746,936	4,762,083	4,770,717
4,705,191	4,747,100	4,762,221	4,770,797
4,705,982	4,747,123	4,762,812	4,771,222
4,706,182	4,747,902	4,762,994	4,771,493
4,708,767	4,747,977	4,763,051	4,771,614
4,712,169	4,748,111	4,763,059	4,772,373
4,712,601	4,748,285	4,763,357	4,772,511
4,713,717	4,748,506	4,764,007	4,776,682
4,716,879	4,749,495	4,764,040	4,777,449

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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 17, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-17-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-15-85
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-17-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-10-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	7-7-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,624,839 to 3,631,538, inclusive

Plant Patents ..... None

REEXAMINATIONS

JANUARY 24, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,826,379 (997th)

METHOD AND MEANS FOR REDUCING THE EFFECT OF ELECTROSTATIC CHARGES ON PAPER IN A COPYING SYSTEM

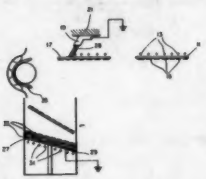
Wayne E. Wright, 167 Wooded La., Villanova, Pa. 19085

Reexamination Request No. 90/001,403, Dec. 22, 1987.

Reexamination Certificate for Patent No. 3,826,379, issued Jul. 30, 1974, Ser. No. 336,816, Feb. 28, 1973.

Int. Cl.[4] B65H *31/02*

U.S. Cl. 271—208



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

New claims **7–22** are added and determined to be patentable.

1. A device to be used with a sheet stacking means which is associated with a sheet transport means and wherein sheets to be stacked therein hold electrostatic charges thereon comprising in combination: first electrical conducting means formed to wipe a sheet passing thereunder and disposed along said sheet transport means so as to wipe one surface of a sheet passing therealong; means connecting said first electrical conducting means to a first voltage potential source in order to cause electrical current to flow in response to a sheet being wiped by said first electrical conducting means; said means to hold sheets at rest to a second voltage potential source whereby charges are induced on said means to hold sheets at rest in response to the approach of a sheet which has been wiped by said first electrical conducting means so that the electrostatic attraction between charges remaining on a sheet approaching said means to hold sheets at rest and said induced charges positively urges said sheets toward said means to hold sheets at rest.

B1 3,998,233 (998th)

BARRETTE WITH SWIVELED HINGE

Irene M. Dorr, 3819 Arbutus Ave., Baltimore, Md. 21207

Reexamination Request No. 90/001,128, Nov. 14, 1986.

Reexamination Certificate for Patent No. 3,998,233, issued Dec. 21, 1976, Ser. No. 615,525, Sep. 22, 1975.

Int. Cl.[4] A45D *8/24*

U.S. Cl. 132—48 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are cancelled.

Claims **2** and **5** are determined to be patentable as amended.

Claim **4**, dependent on an amended claim, is determined to be patentable.

New claims **6** and **7** are added and determined to be patentable.

4. The barrette of claim **1** wherein the swivel means comprise a shaft extending from an end of one of the rib-like mem-

bers, the shaft terminating in a ball, the other of the rib-like members having a slot formed in an end thereof and having depressions formed in the walls of the slot for receiving the ball, thereby to allow the rib-like members to swivel relative to each other.

B1 4,101,703 (999th)

COATED CEMENTED CARBIDE ELEMENTS

Wilfried Schintlmeister, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Reexamination Request No. 90/001,323, Sep. 3, 1987.

Reexamination Certificate for Patent No. 4,101,703, issued Jul. 18, 1978, Ser. No. 571,695, Apr. 25, 1975.

Continuation of Ser. No. 329,128, Feb. 2, 1973, abandoned. This application Sep. 3, 1987, Ser. No. 571,695

Claims priority, application Austria, Feb. 4, 1972, 896/72; Jul. 21, 1972, 6317/72

Int. Cl.[4] B22F *3/00*; **B32B** *9/04, 15/04*

U.S. Cl. 428—552

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

New claims **20–24** are added and determined to be patentable.

1. An article of manufacture comprising a hard metal or sintered carbide substrate and an adherent wear-resistant multilayer coating, the composition of said coating varying through its depth or thickness, wherein

the substrate has carbon disposed in a region adjacent the surface thereof, said region being formed by carburizing said substrate to increase its carbon content,

the coating layer adjacent the carburized surface comprises titanium carbide formed by reacting the carburized surface with a gaseous mixture comprising titanium halide, a hydrocarbon gas and hydrogen, and

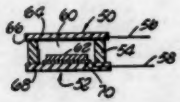
the coating layer overlying the titanium carbide layer comprises titanium nitride formed by reacting the surface of the titanium carbide layer with a gaseous mixture comprising a nitrogen compound, titanium halide and hydrogen.

B1 4,314,227 (1000th)

ELECTRONIC PRESSURE SENSITIVE TRANSDUCER APPARATUS

Franklin N. Eventoff, 2351 Lakeview Ave., Los Angeles, Calif. 90039

Reexamination Request No. 90/001,431, Feb. 2, 1988.
Reexamination Certificate for Patent No. 4,314,227, issued Feb. 2, 1982, Ser. No. 78,323, Sep. 24, 1979.
Int. Cl.[4] H01C *10/10*
U.S. Cl. 338—99



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A pressure responsive analog transducer comprising:

a first contact;

a second contact;

at least one semiconducting layer comprising at least a pressure sensitive semiconductor particulate material, the semiconducting layer disposed in normally spaced relationship with at least one of the first and second contacts, the semiconducting layer having a surface positioned in normally non-electically-conducting relationship with at least one of the first and second contacts, the surface having a multiplicity of microprotrusions extending therefrom, each providing a minute contact location, at least one of the first contact, second contact and semiconducting layer being resiliently responsive to an external pressing force for causing the multiplicity of microprotrusions extending from the surface of the semiconducting layer and at least one of the first and second contacts to variably press against one another to define a variably electrically resistive junction so that electricity conducts between the first and second contacts through the minute contact location of the microprotrusions on the surface so that the resistance across the variably electrically resistive junction decreases in response to an increase in the external pressing force and increases in response to a decrease in the external pressing force.

B1 4,514,473 (1001st)

METHOD OF MANUFACTURING AN ELECTRODE FOR AN ELECTROCHEMICAL CELL, AND AN ELECTRODE MANUFACTURED BY THE METHOD

John Atkin, St Médard en Jalles, and Marie-Thérèse Loustau, Bordeaux, both of France, assignors to Societe Anonyme Dite: SAFT, Romainville, France

Reexamination Request No. 90/001,449, Feb. 18, 1988.
Reexamination Certificate for Patent No. 4,514,473, issued Apr. 30, 1985, Ser. No. 575,566, Jan. 31, 1984.
Claims priority, application France, Feb. 8, 1983, 83 01923
Int. Cl.[4] H01M *4/36, 4/36;* **H05B** *5/00*
U.S. Cl. 429—221

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

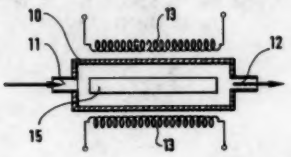
Claims **2, 3, 8** and **9** are cancelled.

Claims **1, 4** and **10** are determined to be patentable as amended.

Claims **5–7** and **11–13**, dependent on an amended claim, are determined to be patentable.

1. A method of manufacturing an electrode for an electrochemical cell, said electrode comprising an active material and a conductive metal powder, the method comprising the steps of:

preparing an intimate mixture of said *conductive metal* powder and said active material in granular form; **[**and**]**



integrating said intimate mixture with a metallic current collector; and

passing the *integrated* mixture *and, current collector* through **[**a pulsed**]** *an* alternating magnetic field, *induced by trains of current pulses in an inductor* for *exposure to a plurality of pulse trains separated by intervals, the frequency of said pulses lying between about 1 MHz and about 10 MHz,* the **[**pulse**]** duration *of each pulse train being greater than 0.05 second* and the interval between **[**pulses**]** *successive pulse trains* being **[**selected**]** *at least equal to the duration of one pulse train, such as* to heat the conductive metal powder sufficiently to sinter the powder without deteriorating the grains of active material.

B1 4,565,727 (1002nd)

NON-WOVEN ACTIVATED CARBON FABRIC

Robert D. Giglia, Rye, N.Y., and Edward A. Battistelli, Stratford, Conn., assignors to American Cyanamid Co., Stamford, Conn.

Reexamination Request No. 90/001,420, Jan. 11, 1988.
Reexamination Certificate for Patent No. 4,565,727, issued Jan. 21, 1986, Ser. No. 725,527, Apr. 23, 1985.
Int. Cl.[4] B32B *5/16, 7/14, 31/00*
U.S. Cl. 428—172

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–4** dependent on an amended claim, are determined to be patentable.

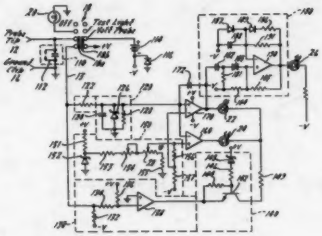
1. An air and water vapor permeable, toxic vapor absorptive, non-woven fabric material comprising a wet-laid sheet containing fibrillated acrylic fiber, activated carbon fiber and activated carbon particles *having a particle size ranging from about 0.1 μm to about 100 μm,* wherein the concentration of fibrillated acrylic fiber ranges from about 5–25% by weight based on the total weight of fibers and particles, the concentration of activated carbon fiber ranges from about 10–75% by weight, same basis, and the concentration of activated carbon particles ranges from about 15–80% by weight, same basis.

B1 4,634,971 (1003rd)

PORTABLE HAND-HELD VOLTAGE SENSOR WITH MANUALLY ADJUSTABLE REFERENCE VOLTAGE FOR COMPARISON WITH SENSED VOLTAGE

Robert C. Johnson, Dearborn; David L. Perry, Canton, and Bernd E. Peitsch, Sterling Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Reexamination Request No. 90/001,371, Nov. 16, 1987.
Reexamination Certificate for Patent No. 4,634,971, issued Jan. 6, 1987, Ser. No. 429,415, Sep. 30, 1982.
Int. Cl.[4] G01R *19/165, 15/08*
U.S. Cl. 324—133



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2 and 3 are cancelled.

Claims 1 and 4 are determined to be patentable as amended.

Claims 5 and 6, dependent on an amended claim, are determined to be patentable.

1. A voltage sensor device comprising:

a portable housing suitably sized for hand-held use;

a first conductor means extending from one end of said housing for contacting a first voltage potential;

a second conductor means extending from said housing for connection to a ground potential;

means within said housing for providing a first adjustable reference D.C. voltage level;

means connected to said first adjustable reference voltage providing means for providing a second reference D.C. voltage level that is continuously less than said first reference voltage level by a predetermined amount;

thumbwheel means accessible on the outside of said portable housing for allowing manual adjustment of said first reference voltage level;

means connected to said first adjustable reference voltage level providing means, said second reference voltage level providing means and said first conductor means to compare the first voltage potential with both said first reference voltage level, for providing a first D.C. output signal when said first voltage potential is less than said first reference voltage level, for providing a second D.C. output signal when said first voltage potential is greater than said second reference voltage level, *for providing both said first and second output signals whenever the voltage potential at said first conductor means is both less than said first reference voltage level and greater than said second reference voltage level, and for providing a third output signal for a predetermined period of time whenever the voltage potential at said first conductor means increases from below to above said second reference voltage level*; and

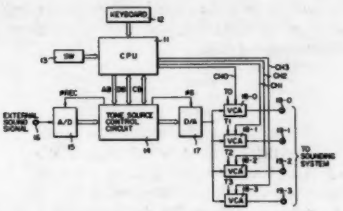
means for distinctively indicating the presence or absence of any of said output signals.

B1 4,667,556 (1004th)

ELECTRONIC MUSICAL INSTRUMENT WITH WAVEFORM MEMORY FOR STORING WAVEFORM DATA BASED ON EXTERNAL SOUND

Kohtaro Hanzawa; Shigenori Morikawa; Hiroshi Morokuma, and Hiroyuki Sasaki, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/001,557, Jul. 13, 1988.
Reexamination Certificate for Patent No. 4,667,556, issued May 26, 1987, Ser. No. 760,291, Jul. 29, 1985.
Claims priority, application Japan, Aug. 9, 1984, 59-167119
Int. Cl.[4] G10H *3/00, 7/00*
U.S. Cl. 84—1.01



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 7–14, 16 and 17 is confirmed.

Claims 2 and 6 are cancelled.

Claims 1, 3–5 and 15 are determined to be patentable as amended.

New claim 18 is added and determined to be patentable.

1. An electronic musical instrument, comprising:

analog-to-digital converting means for converting an analog external sound signal into a digital waveform signal which represents a waveform corresponding to the waveform of said analog external sound signal;

memory means for storing the digital waveform signal output from said analog-to-digital converting means;

digital-to-analog converting means for converting the digital waveform signal output from said memory means into an analog sound signal having a waveform determined by said digital waveform signal;

pitch designating means for designating a pitch of the sound produced based on the analog sound signal derived from said digital-to-analog converting means;

address control logic circuit means coupled to said memory means for designating memory addresses for writing and reading the digital waveform signal; and

control means coupled to said address control logic circuit means and to said pitch designating means for supplying to said address control logic circuit means record and reproduce commands for writing and reading said digital waveform signal in and from the memory means, and for instructing said address control logic circuit means to designate a memory address with a speed determined by said pitch designating means when the digital waveform signal is read out from said memory means, so that a sound having a waveform determined by the read out digital waveform signal and a frequency determined by said pitch designating means can be reproduced, *and*

wherein said address control logic circuit means includes temporary storage register means for storing addresses of said memory means; renewal means for renewing the content of said temporary storage register means; pitch register means for storing the pitch data for determining the renewal speed of

said renewal means; end register means for storing the end address of said renewed content; comparing means for comparing the content of said temporary storage register means and the content of said end register means and for providing an end signal to said renewal means when the content of said temporary storage register means coincides with or exceeds the content of said end register means to control the continuation and stop of the renewal operation of renewal means; addressing means for generating address data comprised of an integer number portion and a decimal fraction portion; effecting means for effecting the writing and reading of waveform data by designating addresses of said memory means according to the integer number portion of said address data; and reading means including first forming means for forming interpolated data according to the decimal fraction portion of said address data and second forming means for forming a tone signal by combining said read out waveform data and said interpolated data.

B1 4,678,498 (1005th)

HERBICIDAL SULFONAMIDES

Steven P. Artz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

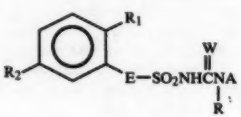
Reexamination Request No. 90/001,562, Jun. 24, 1988.
Reexamination Certificate for Patent No. 4,678,498, issued Jul. 7, 1987, Ser. No. 860,229, May 12, 1986.
Continuation-in-part of Ser. No. 743,955, Jun. 12, 1985, abandoned.
Int. Cl.[4] A01N *43/54*; C07D *236/69, 401/12, 413/12*
U.S. Cl. 71—87

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–24**, dependent on an amended claim, are determined to be patentable.

1. A compound of the formula:



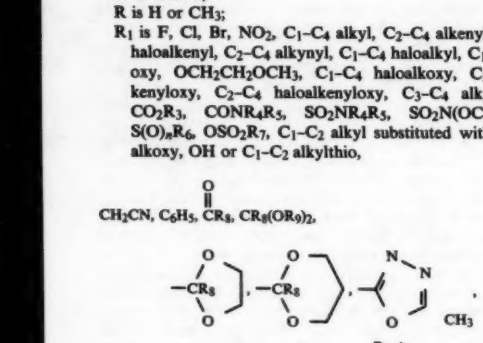
wherein

E is CH_2 or a single bond;

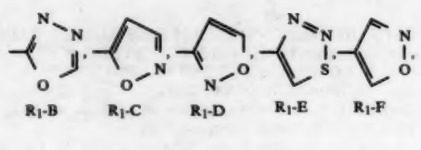
W is O or S;

R is H or CH_3;

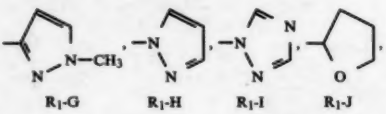
R_1 is F, Cl, Br, NO_2, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, C_1–C_4 haloalkoxy, C_3–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy, C_3–C_4 alkynyloxy, CO_2R_3, $CONR_4R_5$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$, $S(O)_nR_6$, OSO_2R_7, C_1–C_2 alkyl substituted with C_1–C_2 alkoxy, OH or C_1–C_2 alkylthio,



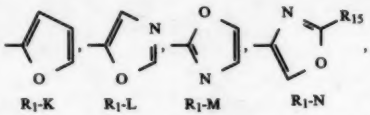
R_1-A



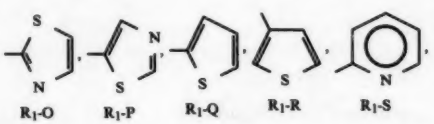
R_1-B R_1-C R_1-D R_1-E R_1-F



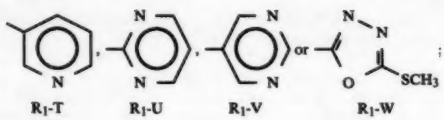
R_1-G R_1-H R_1-I R_1-J



R_1-K R_1-L R_1-M R_1-N



R_1-O R_1-P R_1-Q R_1-R R_1-S

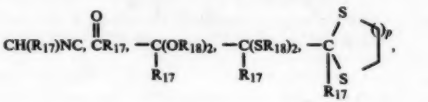


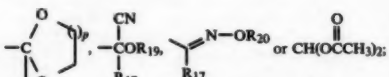
R_1-T R_1-U R_1-V R_1-W

R_2 is

$CH(R_{16})CN$, $CH(R_{17})SCN$, $CH(R_{17})\overset{O}{\overset{\|}{P}}R_{10}R_{11}$, $CH(R_{17})\overset{S}{\overset{\|}{P}}R_{10}R_{11}$,

$CH(R_{17})NR_{12}R_{13}$, $CH(R_{17})SeR_{14}$, $CH(R_{17})N_3$, $CH(R_{17})NO_2$,





R_3 is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl,

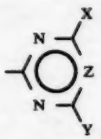
CH_2CH_2Cl, CH_2CH_2F, or C_1–C_2 alkyl substituted with OCH_3 or SCH_3;

R_4 is C_1–C_3 alkyl;

R_5 is H or C_1–C_3 alkyl;

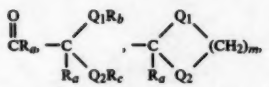
R_4 and R_5 may be taken together to form $(CH_2)_3$ or $(CH_2)_4$;

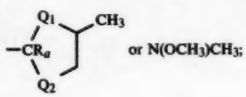
R_6 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$ or $CH_2C{\equiv}CH$;
R_7 is C_1–C_3 alkyl or $N(CH_3)_2$;
R_8 is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkylnyl, CH_2CH_2Cl, CH_2CH_2F, C_1–C_2 alkyl substituted with OCH_3 or SCH_3 and C_3–C_6 cycloalkyl;
R_9 is C_1–C_2 alkyl;
R_{10} and R_{11} are independently C_1–C_2 alkyl, C_1–C_2 alkoxy, C_1–C_2 alkylthio, $NHCH_3$ or $N(CH_3)_2$;
R_{12} and R_{13} are independently H or C_1–C_2 alkyl;
R_{14} is C_1–C_3 alkyl;
R_{15} is H or CH_3;
R_{16} is H, C_1–C_2 alkyl or F;
R_{17} is H or C_1–C_2 alkyl;
R_{18} is C_1–C_2 alkyl;
R_{19} is H, $Si(CH_3)_3$ or C_1–C_2 alkyl;
R_{20} is H or C_1–C_2 alkyl;
p is 1 or 2;
n is 0, 1, or 2;
A is



A-1

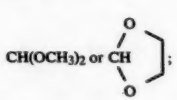
X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, C_3–C_5 cycloalkyl, azido, cyano,





or $N(OCH_3)CH_3$;

m is 2 or 3;
Q_1 and Q_2 are independently O or S;
R_4 is H or C_1–C_3 alkyl;
R_b and R_c are independently C_1–C_3 alkyl;
Z is CH, CCH_3, CC_2H_5, CCl or CBr;
and their agriculturally salts; provided that
(1) when X is halogen, then Z is CH and Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$, $N(CH_3)_2$, OCF_2H or $N(OCH_3)CH_3$;
(2) when X or Y is C_1 haloalkoxy, then Z is CH;
(3) when W is S, then R is H, Z is CH and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{=}CH$, $OCH_2CH_2OCH_3$,



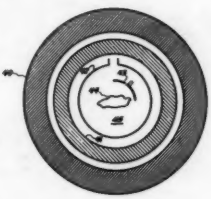
(4) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of R_1 and R_2 is less than or equal to six;
(5) when R_2 is $C(O)R_{17}$, then R_1 is other than C_1–C_4 haloalkyl or C_2 alkyl substituted with C_1–C_2 alkoxy, *OH* or C_1–C_2 alkylthio, and Y is other than cyclopropyl;
(6) when Y is C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl or C_2–C_5 alkylsulfonylalkyl, then R_2 is other than $CH(R_{17})NO_2$
(7) *when R_2 is $C(O)R_{17}$ then R_1 is other than $SO_2NR_4R_5$ and $SO_2N(OCH_3)CH_3$.*

B1 4,737,716 (1006th)

SELF-SHIELDED GRADIENT COILS FOR NUCLEAR MAGNETIC RESONANCE IMAGING

Peter B. Roemer, Schenectady, and John S. Hickey, Burnt Hills, both of N.Y., assignors to General Electric Company, Milwaukee, Wis.

Reexamination Request No. 90/001,511, May 25, 1988.
Reexamination Certificate for Patent No. 4,737,716, issued Apr. 12, 1988, Ser. No. 826,650, Feb. 6, 1986.
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—319



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9** and **10** is confirmed.

Claim **6** is cancelled.

Claims **1**, **5**, **7** and **11–14** are determined to be patentable as amended.

Claims **2–4** and **8**, dependent on an amended claim, are determined to be patentable.

New claim **15** is added and determined to be patentable.

1. A gradient coil set for an MR apparatus comprising a plurality of radially disposed *fingerprint* coils adapted to be placed within a main field magnet, each of said coils adapted to provide a respective surface current distribution, the total magnetic field resulting from the coaction of said surface current distribution having a predetermined gradient in a predetermined single dimension within a predetermined area inside said coil set and a substantially zero value outside said coil set, whereby magnetic forces between said coil set and said field magnet are substantially eliminated.

REISSUES

JANUARY 24, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,838
ELECTRONIC MUSICAL INSTRUMENTS

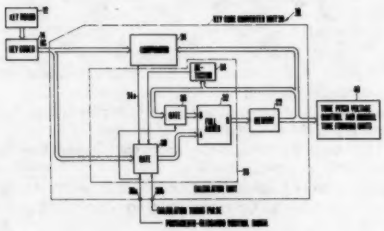
Hideo Suzuki, Kosai, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,237,764, dated Dec. 9, 1980, Ser. No. 807,894, Jun. 20, 1977. Application for reissue Feb. 6, 1987, Ser. No. 12,083

Claims priority, application Japan, Jun. 25, 1976, 51-75065; Jun. 25, 1976, 51-75066

Int. Cl.[4] G10H *1/02*

U.S. Cl. 84—1.24 12 Claims



1. An electronic musical instrument comprising key coder means for delivering key code signals identifying depressed keys, said key code signals having values which only identify depressed keys and which are not proportional to tone frequencies represented by said depressed keys, key code memory means for storing said key code signals, comparator means connected to said key coder means and to said key code memory means for comparing a first key code received from said key code memory means with a second key code received from said key coder means, calculation means responsive to the result of comparison in said comparator means for adding to or subtracting from the content of said key code memory means a predetermined value defining a semitone step repetitively at a predetermined clock rate to change said first key code in said key code memory means by successive semitone steps one after another to the next key code until said first key code in said key code memory means becomes equal to said second key code, and tone forming means connected to said key code memory means for forming a musical tone having a pitch determined by said key code in said key code memory means.

Re. 32,839
BALUSTRADE OF PASSENGER CONVEYOR

Cyuichi Saito, and Yoshihiko Sato, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,666,028, dated May 19, 1987, Ser. No. 797,470, Nov. 13, 1985. Application for reissue Dec. 21, 1987, Ser. No. 135,442

Int. Cl.[4] B66B *23/24*

U.S. Cl. 198—335 17 Claims

1. A passenger conveyor, comprising:

a main body frame;

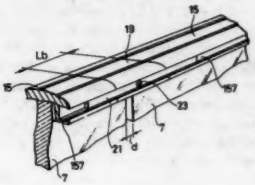
a plurality of steps supported by said main body frame, connected together and mounted on said frame to circulate endlessly;

a pair of handrails driven in synchronism with said steps and in the same direction as said steps;

transparent panels supported by said main frame and disposed on opposite sides of said steps to form side walls;

guide means for said handrail being provided on the upper portions of said panels, including a guide frame having a guide member support portion and leg portions, said leg portions defining therebetween a U-shaped recess;

adhesive means mounting said guide frame on the upper edge portion of said transparent panel to provide a panel assembly in which both ends of said panel axially project beyond the guide frame that is mounted on the panel;



a plurality of said panel assemblies being mounted on said body frame in an end-to-end relation thereby to form an axial gap between adjacent guide frames; and

coupling means, for coupling adjacent ones of said panel assemblies, said coupling means including a joint frame disposed in said gap.

Re. 32,840
LIQUID SPRAY JET ASSEMBLY AND A MINERAL MINING MACHINE CUTTING HEAD INCORPORATING SUCH ASSEMBLY

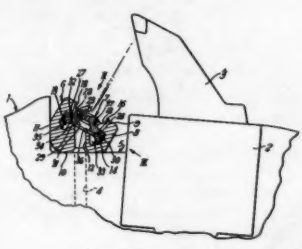
Garrick R. Bingham, Fishlake, Near Doncaster, England, assignor to Green & Bingham Limited, Doncaster, England

Original No. 4,199,107, dated Apr. 22, 1980, Ser. No. 910,672, May 30, 1978. Application for reissue Sep. 27, 1982, Ser. No. 424,646

Claims priority, application United Kingdom, Jun. 9, 1977, 24089/77

Int. Cl.[4] B05B *1/00*

U.S. Cl. 239—600 10 Claims



11. A liquid spray jet assembly comprising a rigid housing designed to be secured to a piece of apparatus, the housing have a passage opening into a chamber therein, a resilient seating within the chamber, a jet releasably fitted within the housing, the jet having an imaginary centerline and having a retaining part having opposed retaining portions and having a passage therethrough communicating with the passage into the housing for the passage of liquid therethrough, in which the housing and the jet are so shaped that the jet is a push fit into the housing through an opening therein and is removable from the chamber through said opening in the housing, the opening having a centerline and having opposed

retaining sections the distance between which is less than a corresponding dimension of said opposed retaining portions of said retaining part of the jet, the resilient seating being made from a compressible material that is deformable to such extent during insertion of the jet to allow the jet to be angularly tilted with respect to said center line of said opening to allow one of said retaining portions to be moved under the corresponding one of said retaining sections and then allow the other of said retaining portions to be moved past said other of said retaining sections so that said retaining part is located partially beneath the opposed retaining sections, in which position the seating is compressed by the jet and the restoring force due to such compression biases the jet to engage the retaining part beneath the opposed retaining sections, such engagement being the sole region of engagement between the jet and the housing, thereby to hold the jet in position within the housing and effect a seal that directs liquid from the housing passage into the jet passage, and the seating further being deformable to allow tilting movement of the jet for disengagement within said region and removal of the jet from the housing through the opening therein, said tilting movements for engagement and disengagement being such as to cause the centerline of the jet to be angularly displaced with respect to the centerline of said opening within a plane containing both said centerlines.

Re. 32,841

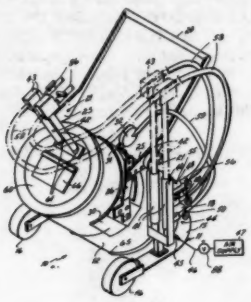
APPARATUS FOR TRANSFERRING POWDER FROM BULK DRUMS

Douglas C. Mulder, Wellington, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Original No. 4,505,623, dated Mar. 19, 1985, Ser. No. 419,166, Sep. 17, 1982. Application for reissue Mar. 4, 1987, Ser. No. 21,661

Int. Cl.[4] B65G *53/26*

U.S. Cl. 406—134 **5 Claims**



1. Apparatus for emptying a large drum of powdered material comprising,

a support for holding said drum with its axis at approximately 45°, *said drum in this attitude having a lower corner,*

said support including an arcuate band surrounding more than one-half the circumference of said drum and in intimate contact therewith,

a vibrator mounted adjacent said drum to vibrate said powdered material,

a cap for said drum,

said cap having at least one hole therein and a sleeve surrounding said hole, said sleeve being aligned with the lower corner of said drum,

a feed tube *having a lower end* and a guide tube surrounding said feed tube with a small clearance between said tubes, said tubes being slidable by gravity in said sleeve to *move said guide tube and the lower end of said feed tube to* the lower corner of said drum,

a vacuum pump on said feed tube, and

means supplying air under pressure to said vacuum pump to aspirate powder out of said drum when said feed and guide tubes are mounted in said sleeve, whereby atmospheric air is drawn into said drum through said clearance between said tubes to agitate and fluidize said powder adjacent the lower end of said feed tube.

Re. 32,842

ARBITRATION OF TENNIS BY CHANGE OF COLORS

Luis Wigoda, 345 North Shore Dr., Miami Beach, Fla. 33141

Original No. 4,538,811, dated Sep. 3, 1985, Ser. No. 457,933, Mar. 7, 1983. Application for reissue Aug. 25, 1987, Ser. No. 99,163

Int. Cl.[4] A63C *19/06*

U.S. Cl. 273—31 **1 Claim**

1. A tennis ball contact indicator in combination with a tennis court comprising:

a thin rectilinear conduit having a transparent and flexible top layer and a bottom layer of one color;

said top layer including a tear and wear resistant material in the form of a rectilinear line;

a [high density] fluid having a color different from said one color and being flowable upon movement of said top layer;

said top layer and bottom layer being separated [by one millimeter or more]; and

said conduit being affixed to said tennis court to define the boundary thereof and said top layer being movable towards said bottom layer to momentarily displace said fluid and expose said one color upon impact of a tennis ball with said top layer to indicate out of bounds of a tennis ball during play.

Re. 32,843

SILICON CARBIDE WHISKER REINFORCED CERAMIC COMPOSITES AND METHOD FOR MAKING SAME

George C. Wei, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Original No. 4,543,345, dated Sep. 24, 1985, Ser. No. 578,407, Feb. 9, 1984. Application for reissue Apr. 3, 1986, Ser. No. 847,961

Int. Cl.[4] C04B *35/56, 35/80, 35/10*

U.S. Cl. 501—95 **9 Claims**

1. A ceramic composite characterized by increased toughness and resistance to fracture, comprising a composite defined by a matrix of ceramic material, *wherein said matrix is selected from the group consisting of* A_2O_3, *mullite and* B_4C having homogeneously dispersed therein about 5 to 60 vol. % of silicon carbide whiskers, with said silicon carbide whiskers having a microcrystalline structure and [in] a size range of about 0.6 μm in diameter and a length of 10 to 80 μm *and which are characterized by cracking bridging pull-out from said matrix when said matrix is subjected to crack-forming stresses,* said composite being of a density greater than about 99% of the theoretical density.

Re. 32,844

CANOE CADDY

Justin Horowitz, 3276 Dutchtown Rd., Saugerties, N.Y. 12477

Original No. 4,538,829, dated Sep. 3, 1985, Ser. No. 610,907, May 16, 1984. Application for reissue Aug. 25, 1987, Ser. No. 89,667

Int. Cl.[4] B60P *3/10*

U.S. Cl. 280—641 **20 Claims**

8. A canoe caddy comprising:

a frame adapted to support a canoe thereon;

front ground-engaging wheel means;

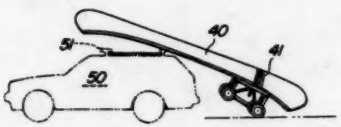
front arm means pivotally attaching said front ground-engaging wheel means to a front portion of said frame, said front ground-engaging wheel means being rotatably disposed along a first horizontal axis adjacent a bottom portion of said arm means;

rear ground-engaging wheel means;

rear arm means pivotally attaching said rear ground-engaging wheel means to a rear portion of said frame, said rear ground-engaging wheel means being rotatably disposed along a second horizontal axis parallel to said first horizontal axis;

first positioning means for selectively securing said front and rear arm means in a substantially vertical position for holding said frame in a full-height, substantially level position directly over said first and second wheel means thereby permitting a canoe while in an inverted position, to be strapped onto said frame and easily loaded onto a carrier rack disposed on top of a vehicle; and

second positioning means for selectively holding said frame in a lowered, inclined position with said arm means pivoted from their vertical positions wherein said frame is secured substantially over said front wheel means and said rear wheel means is secured outwardly of said frame, whereby the canoe, while in an upright position, can be supported and the canoe can be wheeled into the water.



Re. 32,845

PERIOD AND FREQUENCY MEASURING INSTRUMENT

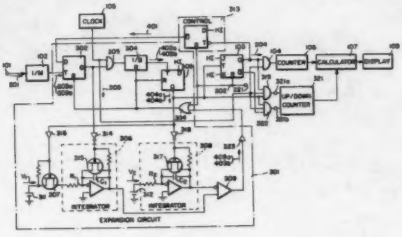
Mishio Hayashi, Saitama, Japan, assignor to Advantest Corporation, Gyoda, Japan

Original No. 4,544,884, dated Oct. 1, 1985, Ser. No. 531,711, Sep. 13, 1983. Application for reissue Feb. 10, 1987, Ser. No. 13,060

Claims priority, application Japan, Sep. 13, 1982, 57-159187

Int. Cl.[4] G01R *23/02*

U.S. Cl. 324—77 R **10 Claims**



1. An instrument for determining the period and frequency of an input signal, comprising

clock means for providing first and second clock signals,

first divider means for dividing said input signal by a predetermined division factor to output a divided signal having a minimum period, wherein a first fractional time is defined between a first output of said first divider means and the first clock pulse of said first clock signal thereafter, and a second fractional time is defined between the following output of said first divider means and the first clock pulse of said first clock [means] *signal* thereafter,

gate signal generating means for generating a gate signal synchronized with said first clock signal,

counter means for counting the clock pulses of said first clock signal during said gate signal,

expansion means for expanding each said fractional time, at least the expanded first fractional time being shorter than the minimum period of said divided signal, *less said first fractional time,*

up-down counter means *for counting said second clock pulses during the expanded first fractional time, and for counting in the opposite sense said second clock pulses during the expanded second fractional time,* for providing a count [of the clock pulses of said second clock signal] corresponding to the difference between the first and second expanded fractional times, and

calculator means for calculating the period and frequency of said input signal by adding the count from said counter means to a value corresponding to the count from the up-down counter means.

PLANT PATENTS

GRANTED JANUARY 24, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,549
AFRICAN VIOLET PLANT NAMED LANAI

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara" , Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,146
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Lanai, as described and illustrated, and particularly characterized by its single violet-shaped purple flowers, occasionally semi-double, with fine white edge, slightly frilled; strong upright flower stems, forming a tight bouquet above the leaves; profuse flowering; vigorous growth habit; medium green, serrated, spear-shaped leaves; and long lasting and non-dropping flowering habit.

6,550
AFRICAN VIOLET PLANT NAMED GISELA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara" , Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,388
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Gisela, as described and illustrated, and particularly characterized by its beautiful white flowers with dark pink frilled edges; fully developed flower heads, producing a tight bouquet that is free standing; vigorous growth habit; medium to dark green, slightly serrated leaves; and long lasting, non-dropping flowering habit.

6,551
CHRYSANTHEMUM PLANT NAMED 24-KARAT

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,982
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 24-Karat, as illustrated and described, and particularly characterized by its decorative form and relatively large inflorescence, intense deep yellow flower color, upright growth habit, and its 9 week flowering response.

6,552
CHRYSANTHEMUM PLANT NAMED MAJESTIC

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,983
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Majestic, as illustrated and described, and particularly characterized by its medium to dark lavender flower color; vigorous growth habit; double flower form; dense and relatively large diameter capitulum, and its 9 week response period.

6,553
DWARF CARNATION PLANT LINDSEY

Kenneth L. Goldsberry, Larimer, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,454
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 **1 Claim**

1. A new and distinct cultivar of *Dianthus caryophyllus,* Linn, identified as 85-215-98 and known as Lindsey and substantially as herein described and illustrated.

6,554
DWARF CARNATION PLANT MAROON BELLS

Kenneth L. Goldsberry, Larimer, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,455
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—73 **1 Claim**

1. A new and distinct cultivar of *Dianthus carophyllus,* Linn, identified as 85-215-6 and known as Maroon Bells and substantially as herein described and illustrated.

6,555
DWARF CARNATION PLANT CRESTONE

Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,595
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct cultivar of *Dianthus caryophyllus,* Linn, identified as 85-230-3 and known as Crestone and substantially as herein described and illustrated.

6,556
LILY PLANT NAMED CHARLESTON

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed May 18, 1987, Ser. No. 50,858
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive variety of Asiatic hybrid lily plant and parts thereof, substantially as herein shown and described, characterized by its large "starry" flower form having fluted tepal margins and a distinctive yellow/white/yellow color pattern: the excellence of its flower form, and its versatility both as a garden plant and as a cut flower producer from precooled bulbs forced out-of-season under glass.

6,557
LILY PLANT NAMED 'CRIMSON PIXIE'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed May 18, 1987, Ser. No. 51,823
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive variety of Asiatic hybrid lily plant and parts thereof substantially as herein shown and described, characterized by its completely unspotted, broad tepalled, red to red-orange colored flowers, by its short stems, its longer and abundantly leaved foliage, and its upright flowering silhouette; and by the excellence of its flower form and versatility both as a garden plant and as a pot plant variety.

6,558

STRAWBERRY PLANT CALLED 'MUIR'

Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Apr. 30, 1987, Ser. No. 44,937
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—49 **1 Claim**

1. The new distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above together with the parts thereof.

6,559

MINIATURE ROSE PLANT NAMED 'ARIZONA SUNSET'

Nelson F. Jolly, P.O. Box 188 Gregg Neck Rd., Galena, Md. 21635

Filed Mar. 30, 1987, Ser. No. 32,431
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by brilliant orange and yellow blended flowers not heretofore reflected so vividly in the color range of the miniature rose class.

6,560

MINIATURE ROSE PLANT NAMED 'SWINGER'

Nelson F. Jolly, P.O. Box 188 Gregg Neck Rd., Galena, Md. 21635

Filed Mar. 30, 1987, Ser. No. 32,432
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by flowers of unusually brilliant golden yellow opening to a clear golden ivory flower with deeper yellow tones at base of inner petal; flower form is excellent on this vigorous, upright growing plant.

6,561

MINIATURE ROSE PLANT NAMED 'PROUD HERITAGE'

Nelson F. Jolly, P.O. Box 188, Gregg Neck Rd., Galena, Md. 21635

Filed Mar. 30, 1987, Ser. No. 32,433
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by dark crimson well-formed blooms that hold their color throughout the life of the flower; strong upright growing plant, taller than the average miniature with well-formed 2" flowers that cover the complete plant.

6,562

CHRYSANTHEMUM PLANT NAMED AMETHYST

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,984
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Amethyst, as illustrated and described, and particularly characterized by its fully double, dark lavender flowers; very long and sturdy peduncles; and its 9 week response.

6,563

CHRYSANTHEMUM PLANT NAMED TANGELO

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,985
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Tangelo, as illustrated and described, and particularly characterized by its daisy type flowers which have orange bronze ray florets and lime green disc florets, relatively short ray florets, long sturdy peduncles, and its 8 week flower response.

6,564

KALANCHOE PLANT NAMED HELGOLAND

Joachim Post, Kirchlinteln, Fed. Rep. of Germany, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 11, 1987, Ser. No. 60,673
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Helgoland, as described and illustrated, and particularly characterized by its light red flower color, strong growth habit, free branching habit, average 11 week flowering response, and its ability to adapt to production in 10–12 cm pots.

PATENTS

GRANTED JAN. 24, 1989

ERRATA

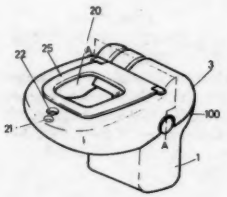
For CLASS	See PATENT NO.
029-822	4,4799,405
144-362	4,4799,447
220-260	4,4799,503
227-018	4,4799,611
227-121	4,4799,612
350-003	4,4799,739
414-331	4,4799,843
474-168	4,4799,909
514-015	4,4800,191
514-643	4,4800,235
369-067	4,4800,305
341-131	4,4800,364
341-119	4,4800,365
346-854	4,4800,385

PATENTS

GRANTED JANUARY 24, 1989

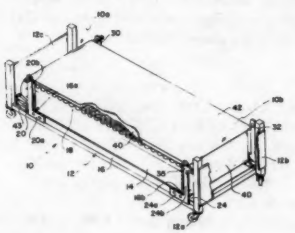
GENERAL AND MECHANICAL

4,799,272
ROLL-UP FLUSH TOILET
Weiyo Horng, No. 41, Yu Lo Street, Taoyuan, Taiwan
Filed Oct. 21, 1987, Ser. No. 111,993
Int. Cl.[4] E03D *11/12*
U.S. Cl. 4—312 **4 Claims**



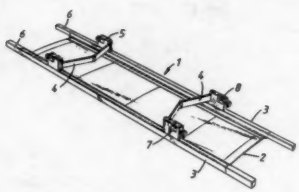
1. A flush toilet comprising:
a base having a discharge passage;
a body rotatably connected to said base, said body having a top and bottom face, said top face having a first recess for normal waste discharge when said body is in a level position and said bottom face having a second recess when said body is in an upright position for service as a urinal, said second recess being uncovered in said upright position; and
rotating means provided between body and base for selecting either level or upright position of said body;
said first and second recess body including passages for allowing said recess to communicate with said discharge passage of said base.

4,799,273
PATIENT MOVING MEANS FOR HOSPITAL BED
Karl H. Elze, 300 S. Carson Meadow Drive, 15, Carson City, Nev. 89701
Filed Jan. 15, 1988, Ser. No. 144,481
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R **5 Claims**



1. An apparatus for moving a patient without lifting toward the head of a bed having a frame and a mattress thereupon, comprising:
a pair of head support brackets secured to said frame and extending upwardly therefrom,
a take-up bar rotatably mounted between said head support brackets,
turning means for said take-up bar,
an upper flexible sheet-like member having a first edge and a second edge, said first edge detachably secured to said take-up bar,
a pair of foot support brackets secured to said frame and extending upwardly therefrom,
a foot anchor bar detachably mounted between said foot support brackets,
a lower flexible sheet-like member disposed intermediate said upper flexible sheet-like member and said mattress, said lower sheet-like member having a head edge and a foot edge,
said foot edge detachably secured to said foot anchor bar, and
means providing tension upon said head edge to hold said lower flexible sheet-like member taut and wrinkle-free, whereby
longitudinal movement of said lower flexible sheet-like member is prevented as said turning means is manipulated to shift said upper sheet-like member toward said take-up bar.

4,799,274
FOLDING STRETCHER
Svein A. Dommerud, Nesbru, Norway, assignor to A/S Apotekernes Faellesindkjop, Oslo, Norway
PCT No. PCT/NO86/00076, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02886, PCT Pub. Date May 21, 1987
PCT Filed Nov. 17, 1986, Ser. No. 74,535
Claims priority, application Norway, Nov. 18, 1985, 854599
Int. Cl.[4] A61G *1/00*
U.S. Cl. 5—82 R **1 Claim**

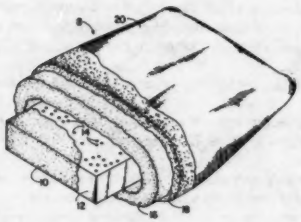


1. A foldable stretcher comprising:
(a) two longitudinal profiles for supporting a stretcher sheet;
(b) a pair of brackets mounted on each of said profiles and longitudinally spaced thereon, each bracket being opposite a bracket on the other of said profiles;
(c) two foldable transversal stiffening members each having two outer ends, each end secured to one of said opposing brackets;
(d) each of said brackets having a horizontal through opening and a vertical through opening, each opening being adapted to receive an elongated member for serving as a leg or an extension and a clamping screw for holding the leg or extension in place in either opening.

4,799,275
SHOCK-ABSORBING PILLOW
William B. Sprague, Jr., 2915 Arbor Dr., West Linn, Oreg. 97068
Filed Dec. 7, 1987, Ser. No. 129,292
Int. Cl.[4] A47G *9/00*
U.S. Cl. 5—431 **1 Claim**

1. A pillow for permitting unrestricted expansion of a person's chest or abdominal cavity in a manner which does not unduly stress a surgical site located therein when coupling, sneezing or hiccuping, comprising:
(a) a resiliently deformable central core;

(b) an impervious membrane which encapsulates said core;
(c) means defined in said membrane for permitting the flow of air through said membrane at a controlled rate when said core is compressed and again when it expands after having been compressed;
a resiliently deformable cushion which surrounds said core and said membrane;



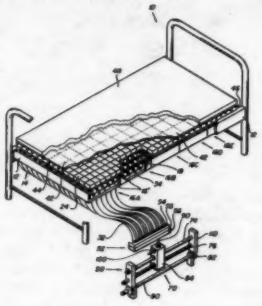
(e) a fiber retention layer which covers said cushion;
(f) ticking which covers said retention layer; and
(g) wherein said core and said cushion both comprise open-celled foam with the foam in said cushion being more easily deformed than the foam in said core.

4,799,276

BODY REST WITH MEANS FOR PREVENTING PRESSURE SORES

Ehud Kadish, 49945 Moshav Neve Yarak, Israel

Filed Sep. 11, 1987, Ser. No. 95,225
Claims priority, application Israel, Sep. 15, 1986, 80025
Int. Cl.[4] A47C 27/08
U.S. Cl. 5—446 **20 Claims**



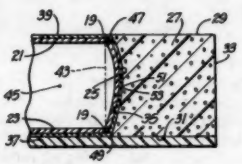
1. A body rest such as a bed or a chair seat with means incorporated for avoiding the development of pressure sores caused by prolonged local pressure against a patient's body, comprising:
a matrix of freely vertical displaceable support members, having head portions each constituting a fraction of a continuous couch surface of the body rest;
pressure responsive means associated with each head portion adapted to measure the pressure of the respective patient's body sections against its support member;
fluid chamber means provided underneath and floatingly supporting each of the support members;
valve means associated with and controlling the discharge of fluid from the chambers under the pressure of the respective support member;
valve actuator means for selectively opening any of the valve means;
fluid batching means for receiving a pre-determined, fixed amount of fluid discharged from the fluid chamber upon actuation of the valve means by the valve actuator means thereby partly relieving the pressure within the fluid chamber and causing the downward displacement of the respective support member;
means for venting the batching means after release of the valve by its actuating means; and
control means operatively associated with the pressure responsive means for actuating the valve means when the said prolonged local pressure exceeds a pre-determined amount.

4,799,277

HYBRID WATERMATTRESS HAVING CONCAVE SOFTSIDES

Clarke W. Goodale, Simi Valley, Calif., assignor to American-National Watermattress Corporation, Anaheim, Calif.

Continuation of Ser. No. 899,842, Aug. 25, 1986, abandoned.
This application Mar. 21, 1988, Ser. No. 175,680
Int. Cl.[4] A47C 27/08
U.S. Cl. 5—451 **15 Claims**



1. A hybrid watermattress comprising:
a bladder formed of flexible sheet material and adapted to be filled with water;
the sheet material including a major top panel, a major bottom panel, and at least one lateral panel connecting the top panel and the bottom panel, the lateral panel having an initial shape as the bladder is manufactured and assuming a convex shape when the bladder is filled with water, said initial and convex shapes being different;
a compressible sidewall extending laterally around the bladder and having a supporting surface which faces the lateral panel of the bladder;
the supporting surface of the sidewall in an uncompressed state having a concave shape generally complementary to the convex shape of the lateral panel; and
a mattress cover disposed to envelope the bladder and the sidewall of the watermattress.

4,799,278

MACHINE AND A METHOD FOR DYEING FABRICS WITH ALREADY KNOWN DYESTUFFS

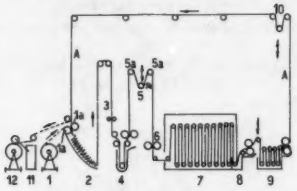
Hans A. Beeh, Don Orione 568, Victoria (1644), Argentina

Filed Jun. 12, 1987, Ser. No. 62,455
Int. Cl.[4] D06B 3/12, 21/00, 23/00
U.S. Cl. 8—151 **7 Claims**

2. An apparatus for dyeing fabrics in dyelots in which dyeing stages are performed during the passage of a fabric dyelot along a treatment path through treatment stations, the fabric dyelot having its ends secured to a leader to obtain an endless sheet-form loop capable of continuous translational movement in the same direction through the stations, the apparatus comprising a fabric accumulator from which the fabric is continuously fed in the same direction repeatedly through said treatment stations; said treatment stations comprising a single padder trough containing dyestuff which can be replaced or emptied during the passage of the leader therethrough, a foam applicator, a steamer and a wash box placed in the treatment path and arranged in succession one after the other.

6. A process for dyeing fabrics in which a fabric dyelot is

passed from an accumulator along a treatment path extending through successive treatment stations including a padder for dyestuff and dye fixing means arranged in succession which process comprises the steps of: securing opposite ends of the dyelot to a leader to obtain an endless sheet-form loop; feeding



the loop continuously in the same direction through successive treatment stations repeatedly without stopping and, altering the operational condition of at least one of the stations for successive passes of the dyelot therethrough during the passage of the leader through the one station.

4,799,279

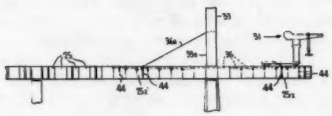
METHOD OF CONSTRUCTING THE APPROACH AND MAIN SPANS OF A CABLE STAYED SEGMENTAL BRIDGE

Jean M. Muller, Tallahassee, Fla., assignor to Figg and Muller Engineers, Inc., Tallahassee, Fla.

Continuation of Ser. No. 803,669, Dec. 2, 1985, abandoned. This application Sep. 25, 1987, Ser. No. 102,318

Int. Cl.[4] E01D *21/04*

U.S. Cl. 14—1 **9 Claims**



1. A method of constructing a segmental bridge from like concrete box girders, the bridge having a main span of a predetermined length, and a plurality of interconnected approach spans at opposite ends of said main span, each of said approach spans having a length substantially less than said predetermined length of said main span, and said main span being defined by a pair of longitudinally spaced apart main span piers, said approach spans being defined by pairs of longitudinally spaced apart approach span piers, a last of said approach spans being defined by one of said approach span piers and one of said main span piers, the method comprising the steps of:

(A) first constructing each of said approach spans toward said opposite ends of said main span, said constructing step for each of said approach spans comprising:

(a) extending a pair of transversely spaced apart assembly trusses between one of said pairs of approach span piers which define one of said approach spans, said trusses being movably supported on opposite sides of said one of said pairs;

(b) completely spanning the distance between said one of said pairs by loading precast concrete box girders one-at-a-time on to said trusses from one of said approach span piers which is located a greater distance from said main span compared to the spacing of the other of said approach span piers from said main span, each of said girders having transversely extending wings supported on said spaced trusses;

(c) sliding said box girders in succession in a direction toward said main span, after being loaded on to said trusses, until a first of said girders directly overlies said other approach span pier;

(d) connecting said first box girder to said approach span other pier;

(e) abutting the succeeding girders against said first girder and to each other and connecting all of said girders to one another;

(f) moving said assembly trusses so as to extend between another adjacent pair of said longitudinally spaced approach span piers which define another of said approach spans adjacent said one approach span, one of said another adjacent pair comprising said other approach span pier and the other of said another adjacent pair being spaced closer to said main span compared to said one pier of said another adjacent pair;

(g) repeating said steps (b), (c), (d) and (e) for said another approach span;

(h) repeating said steps (f) and (g) for further adjacent pairs of longitudinally spaced approach span piers defining further adjacent approach spans and for said last approach span at which said main span is reached;

(i) erecting permanent pylons at the locations of said main span piers;

(B) then from said last of said approach spans adjacent said main span,

(aa) cantilevering and connecting concrete box girders successively to each other, as a continuation of said last approach span, from said main span piers toward one another until the midpoint between said main span piers is reached; and

(bb) during step (aa), supporting said main span from each of said pylons by extending a plurality of permanent cable stays from each of said pylons to designated ones of said girders of each of said last approach spans.

4,799,280

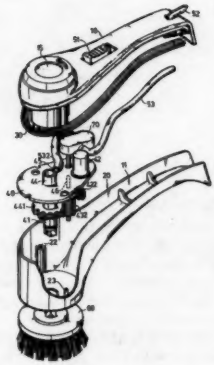
MOTOR DRIVEN ROTARY BRUSH

Fu-Kuei Lee, P.O. Box 10780, Taipei, Taiwan

Continuation-in-part of Ser. No. 764,628, Aug. 12, 1985, abandoned. This application Jan. 5, 1987, Ser. No. 733

Int. Cl.[4] A46B *13/04*

U.S. Cl. 15—29 **1 Claim**



1. A motor driven rotary brush comprising:

a casing having upper and lower portions forming a hollow interior compartment;

a support plate mounted in said compartment and having a slide way formed as a track;

motor means and first idle gear means mounted on said support plate, said motor means including switch means to control the revolving direction of said motor means;

a pump means having a shaft and mounted on said support plate and having a gear mounted on the shaft end;

a hollow shaft mounted in said lower portion and having an upper end and a lower end, a gear fixed on said upper end and in engagement with said first idle gear means, and said lower end extending outside of said lower portion;

a moveable idle gear means having plural gears and mounted on a shaft positioned in the slide way formed by the slide way in the support plate and a cooperating slide way in the lower portion of the casing, said movable idle gear means being in driving engagement with said motor means and adapted to be moved to a certain position according to the revolving direction of said motor and allowing the plural gear to engage the gear of said pump means and another of said plural gears to engage a gear of said first idle gear means, or moved to another position that solely engages the gear of said hollow shaft;

a pipe means in said casing extending to said pump means and from said pump means to said hollow shaft;

a water supply means coupled to said casing and connected to said pipe means to discharge water through said hollow shaft, said water supply means having valve means to control the flow therethrough;

an additive container mounted on the upper casing portion, said container having means to discharge additive from said container to said pipe means to mix said additive with said water prior to discharge from said hollow shaft, said means to discharge including outlet means from the container and valve means to control said outlet means; and

a brush mounted on the lower end of said hollow shaft, said brush having a central opening mounting said brush on said hollow shaft and providing means for passage of water and additive through said brush to a work surface.

4,799,281

DEVICE FOR SWEEPER UNITS

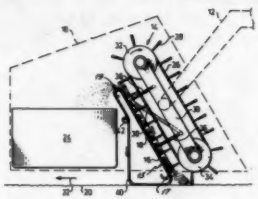
Henry Sandström, 11, Vimpelgatan,, S-591 00 Motala, Sweden

Filed Nov. 20, 1987, Ser. No. 123,214

Claims priority, application Sweden, Dec. 18, 1986, 8605464

Int. Cl.[4] E01H *1/04*

U.S. Cl. 15—80 **11 Claims**



1. In a sweeper having an elevating mechanism including a chute which is inclined upwardly from a lower edge to an upper edge in the direction of travel of the sweeper and which along the upper surface thereof debris is transported by an endless carrier and wherein a space is created between the lower edge of the chute and the surface to be swept the improvement comprising, an endless flexible sheet means, said sheet means extending forwardly of said endless carrier in the direction of travel of the sweeper and being in contact with the surface to be swept, said sheet means extending upwardly from the surface to be swept through the space between the lower edge of the chute and along the upper surface of the chute, said endless carrier including a plurality of sweeper elements, said sheet means extending between said sweeper elements and the upper surface of the chute and over the upper edge of the chute and downwardly thereof to the surface to be swept, drive means for moving said endless carrier relative to said upper surface of the chute, said sweeper elements being engageable with the surface to be swept as said endless carrier is moved by said drive means, whereby said flexible sheet means prevents debris from being urged forwardly of the lower edge of the chute as said endless carrier is moved by said drive means.

4,799,282

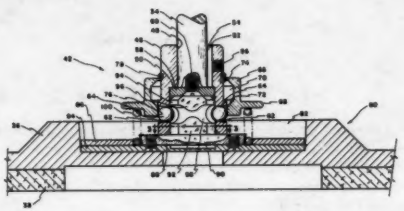
PAD HOLDER RELEASE MECHANISM FOR FLOOR TREATING MACHINES

Ernest J. Fischer, Skokie, Ill., assignor to Breuer Electric Mfg. Co., Chicago, Ill.

Filed Oct. 19, 1987, Ser. No. 110,372

Int. Cl.[4] A47L *11/14*

U.S. Cl. 15—98 **10 Claims**



1. In combination, a floor treating machine having a frame and a rotary output shaft extending from said frame; a pad holder adapted to carry a floor treating pad; and means for releasably connecting said pad holder to an end of said shaft, said releasably connecting means comprising latch means on said pad holder and shaft, said latch means being operative in response to movement together of said pad holder and shaft to connect the same together for conjoint rotation, and manually manipulatable control means operatively connected to said latch means and movable to a release position to cause said latch means to disconnect said pad holder and shaft, said latch means including a tubular member on one of said pad holder and shaft, a post on the other of said pad holder and shaft and extendible into a passage in said tubular member when said pad holder and shaft are moved together, and releasable coupling means for connecting said tubular member to said post in response to sufficient extension of said post into said member, said control means to cause the same to same releasable coupling means to cause the same to disconnect said member and post when said control means is moved to said release position, said releasable coupling means including detent means comprising a groove in the periphery of said post and a ball carried by said tubular member, said ball extending partially into said groove upon sufficient extension of said post into said member to connect said member and post together, and further including means responsive to sufficient extension of said post into said member to yieldably urge said control means to a latch position whereat said control means blocks movement of said ball out of said groove to maintain said member and post connected together, said control means being manually movable against said yieldable urging means to said release position to free said ball for movement out of said groove to disconnect said post and member.

4,799,283

COLLAPSIBLE CLEANING IMPLEMENT

Susen J. Haydon, London, England, assignor to Interpat Ltd., London, England

Filed Nov. 6, 1987, Ser. No. 118,183

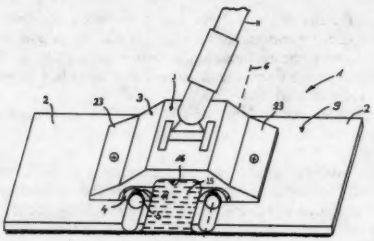
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638225

Int. Cl.[4] A47L *13/11*

U.S. Cl. 15—229.1 **16 Claims**

1. A cleaning implement, particularly a mop, comprising a support having first and second stops; a composite mop head

including substantially mirror symmetrical first and second sections, said first section having freedom of movement toward and away from said second section; and first and second hinges respectively connecting said first and second sections to said support for pivotal movement about discrete axes between extended positions in which said sections are substantially coplanar and respectively abut said first and second



stops, and collapsed positions in which said sections are adjacent and confront each other, said sections having means for holding said sections against movement relative to the respective stops in extended positions of said sections, said holding means including recesses for said stops in the respective sections and at least said first hinge mounting said first section with limited freedom of movement substantially at right angles to the respective axis.

4,799,284

PLATE CLEANING APPARATUS AND CLEANING ROLLER THEREFOR

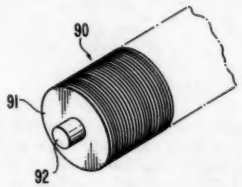
Masao Toriwaki, Otsu; Kinya Kawakami, Mitaka, and Tomoaki Ishino, Funabashi, all of Japan, assignors to Toyo Netsu Kogyo Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 038,827, Apr. 15, 1987. This application Mar. 21, 1988, Ser. No. 171,468

Claims priority, application Japan, Jun. 11, 1986, 61-133700; Jun. 11, 1986, 61-87746

Int. Cl.[4] B08B *1/02*

U.S. Cl. 15—230.12 **1 Claim**



1. In a cleaning roller adapted for use in a plate cleaning apparatus arranged in a production line of miscellaneous plates, the improvement comprising;

a plurality of thin discs of nonwoven fabric bonded side by side with adhesive therebetween, said adhesive having substantially the same softness before it is applied to the nonwoven fabric, and

a longitudinal shaft extending through central holes provided in said thin discs,

said shaft and said nonwoven fabric being bonded together by said adhesive.

4,799,285

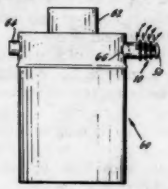
OUTLET PORT BAFFLE FOR EXHAUST AIR

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Oct. 27, 1987, Ser. No. 114,079

Int. Cl.[4] A47L *5/00*

U.S. Cl. 15—327 R **11 Claims**



1. An outlet port baffle for redirecting air or gas exiting from an outlet port comprising:

a tubular entrance section for being connected with an outlet port and for receiving air or gas flowing through the outlet port and for conducting air therethrough;

a tubular intermediate section communicating with and forming an extension from the entrance section for conducting air or gas therethrough, a plurality of apertures through the intermediate section arrayed over an arc extending only partially around the intermediate section, and all of the apertures being oriented and together covering an arc that is of a length that air or gas flowing through the apertures will exit in the same general direction over an arcuate pathway which is across the path of the air or gas that has passed into the entrance section and through the intermediate section; the apertures are arranged in a plurality of rows of the apertures, with each of the rows extending along the length of the intermediate section and the rows together defining the arcuate exit pathway for the fluid; and

an end section beyond the intermediate section for blocking passage of air or gas out the end of the intermediate section, for redirecting all of the air or gas out of the apertures of the intermediate section over the arcuate exit defined by the apertures;

the baffle being angularly movable in the outlet port to direct the air or gas from the apertures in a selected direction.

4,799,286

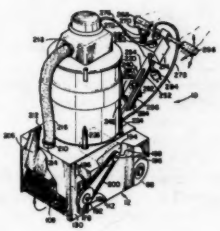
POWER DRIVEN VACUUM SWEEPER

Berl I. Rubin, 242 Erica St., Philadelphia, Pa. 19116

Filed Aug. 4, 1986, Ser. No. 892,591

Int. Cl.[4] A47L *5/34*

U.S. Cl. 15—361 **7 Claims**



1. A floor sweeping apparatus comprising:

a unitary frame;

a lever, said lever being fixedly connected at one end to a first rear portion of said frame;

handlebars fixedly connected to the other end of said lever;

a cylindrical bristle broom rotatably mounted on a front end of said frame, the bristles of said broom supporting said frame in a spaced apart relationship with a floor;

power means mounted on said frame and connected to said broom to rotate it in a first rotatable direction;

wheels mounted on another rear portion of said unitary frame for rolling said frame along the floor, manual straight line movement of said unitary handlebars, lever and frame in a right to left direction being operable to rotate said wheels in a second opposite rotatable direction along the floor and thereby counteract the tendency of said floor engaging rotating broom to move said frame, lever and handlebars in an opposing direction and said wheels being juxtapositioned to said broom and said lever to provide a fulcrum at the rear portion of said frame about which an upward movement of said handlebars increases the pressure applied by said bristles against the floor and a downward movement of said handlebars decreases the pressure applied by said bristles against the floor a pin, said pin having one end fixed to said frame, a block, said pin having its other end extending through a passageway in said block to form a pivot about which said block is pivotally mounted on said frame, a second passageway in said block, a shaft extending through said second passageway, a different one on said wheels rotatably supported on opposite ends of said shaft, said pin and block connection providing a means to allow said wheels to be oscillated in a seesaw manner when they encounter an irregular floor surface and without transmitting said oscillating motion by way of said frame to said broom.

4,799,287

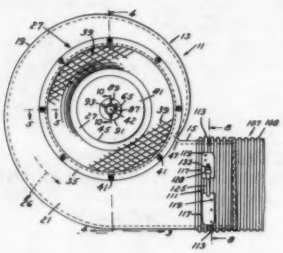
BLOWER HOUSING CONSTRUCTION

James A. Belanger; Robert J. Wentworth, both of Northville; Barry S. Turner, Livonia, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed May 4, 1987, Ser. No. 45,331

Int. Cl.[4] A47L 5/14

U.S. Cl. 15—405 **14 Claims**



1. A blower assembly comprising a unit blower housing of molded plastic material having a generally circular outer wall and laterally spaced front and rear walls defining an impeller chamber of rectangular cross-section;

said housing terminating in an elongated tangential outlet arranged upon a first axis adapted to receive a flexible hose;

said elongated tangential outlet defining with an end portion of said outer wall a reverse curved cut off point extending substantially across the distance between said front and rear walls;

said front wall having a circular air inlet opening to said impeller chamber, arranged upon a second axis at right angles to and spaced from said first axis;

an air inlet cone projected through the inlet opening in said front wall, said inlet cone at one end having an annular mount flange overlying and secured to said front wall and at its other end terminating in an annular convex throated outlet;

an electric motor upon a support having a drive shaft extending along said second axis and projected through said rear wall and into said impeller chamber;

a circular mount flange on said motor coaxial of said drive shaft;

means for aligning said drive shaft with said second axis and for securing and mounting said rear wall upon said motor;

said aligning means including a motor pilot plate having a circular recess upon said second axis arranged upon the exterior of said rear wall;

said circular mount flange of said motor being axially nested and retained within the circular recess of said pilot plate; and

a power driven impeller nested within said impeller chamber axially mounted upon said second axis and secured to said drive shaft and having an air intake receiving the annular convex throated outlet of said air cone outlet;

said second axis being so arranged along with said first axis that said impeller defines with said cut-off point an optimum gap of reduced dimension for a maximum smooth non turbulent substantially noiseless air flow through said elongated tangential outlet;

a circular air screen mounted upon, spanning and secured to said inlet cone mount flange; and

said mount flange of said air inlet cone having an annular reverse turned anchor flange overlying said mount flange defining a channel, said circular air screen being peripherally nested and protectively anchored within said mount flange channel.

4,799,288

PIVOT BUSH

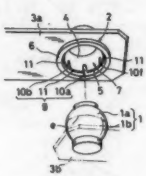
Toshihide Kimizawa, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 10, 1987, Ser. No. 131,122

Claims priority, application Japan, Dec. 15, 1986, 61-191713[U]

Int. Cl.[4] F16L 5/02

U.S. Cl. 16—2 **8 Claims**



1. A pivot bush made of a plastic material for swingably holding upper and lower spherical surface portions with respect to an equator of a spherical pivot, said pivot bush comprising an upper concave spherical surface corresponding at least to a portion of the upper spherical surface portion above the equator of the spherical pivot, a main body connected onto said upper concave spherical surface to enclose the remaining portion of said spherical pivot under the equator and having therein a cylindrical surface with a lower end thereof opened up, and a bowl shaped elastic thin piece originating from a boundary between said upper concave spherical surface and said cylindrical surface and provided with an opening at the center of a lower portion thereof, an inner surface of the elastic thin piece forming a lower concave spherical surface corresponding to a part of said lower spherical surface portion under the equator of said spherical pivot, said elastic thin piece being split into a plurality of pieces by a plurality of slits which extend in the longitudinal direction and are formed by cutting

the elastic thin piece from the opening of the center of the lower portion thereof, said main body having at an outer periphery thereof an annular groove engageable with a marginal portion of a mounting hole of an arm along the boundary between said upper concave spherical surface and said cylindrical surface.

4,799,289

HINGE FRAME WITH EASILY-RELEASABLE ATTACHMENT OF THE FURNITURE-SIDE COVER BRACKET TO THE FURNITURE PIECE

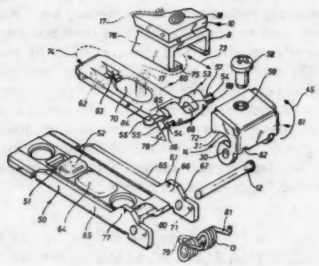
Alfred Grass, Höchst, Austria, assignor to Alfred Grass Ges.m.b.H. Metallwarenfabrik, Austria

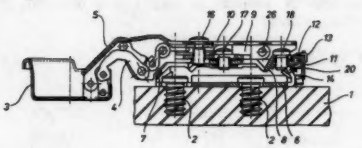
Filed Sep. 25, 1986, Ser. No. 911,462

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607406; Jul. 19, 1986, 3624237

Int. Cl.[4] E05D *7/06, 7/12, 7/04*

U.S. Cl. 16—236 **11 Claims**





1. A quick release hinge frame attached to a furniture piece and a door communicating therewith comprising: mounting plate means secured to the furniture piece; a base plate having a detent engaging shoulder releasably secured to said mounting plate; a door connected cover bracket releasably secured to said base plate; detent means pivotally attached to said mounting plate means; and spring means urging said detent means into a spring loaded engagement with said detent engaging shoulders thereby releasably securing the door to the furniture piece.

4,799,290

CABINET HINGE

Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager GmbH & Co. KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

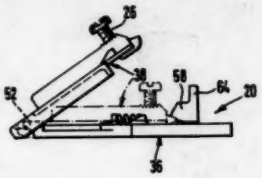
Filed Jul. 15, 1986, Ser. No. 886,259

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1985, 3525279

Int. Cl.[4] E05D *7/06, 7/12*

U.S. Cl. 16—237 **7 Claims**

1. A hinge for hanging a door on a carcase of a piece of furniture, said hinge having a door-related hinge part fastenable to a door, and a carcase-related hinge part, a linkage mechanism coupling said carcase-related hinge part to said door-related hinge part so as to be pivotable about a hinge pivot axis from an open to a closed position and vice versa, mounting plate means fastenable to a carcase, said mounting plate means comprising two parts separable from one another: a first mounting plate part having a face to be affixed to the carcase, and a second mounting plate part for adjustable holding said carcase-related hinge part, said first mounting plate part having adjacent said door-related hinge part at least one hook projection projecting from said face toward said door-related part, and at least one associated hook socket in said second mounting plate part, said at least one hook projection and hook socket having associated arcuate engagement surfaces of at least approximately the same radius, center of curvature of the



arcuate engagement surface of said hook projection being approximately the same point as the center of the path of movement of the arcuate engagement surface of said hook socket at the beginning of the movement from the open position in closing direction of said hinge, whereby said hook socket snaps into engagement with said hook projection and said second mounting plate part into engagement with said first mounting plate part during assembly, and a spring catch mechanism interconnecting said two mounting plate parts together, said spring catch mechanism having a handle remote from said door-related hinge part for unlocking said catch mechanism.

4,799,291

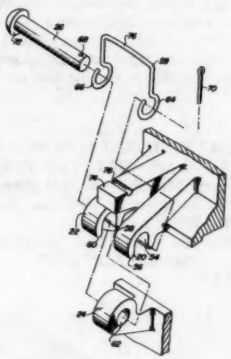
SELF-ALIGNING HINGE

Robert H. Ankum, Davenport, Iowa, and Jay H. Olson, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.

Filed Oct. 31, 1983, Ser. No. 546,833

Int. Cl.[4] E05D *7/10*

U.S. Cl. 16—259 **12 Claims**



1. A hinge for resiliently pivotally coupling a first member to a second member comprising the combination of:

a first lug arrangement adapted to be mounted on the first member and having at least one opening therein;

a second lug arrangement adapted to be mounted on the second member and having an opening therein;

a pin residing within the openings in the first and second lug arrangements, the pin being smaller than the at least one opening in the first lug arrangement to permit movement

thereof relative to the first lug arrangement in a plurality of different directions; and

a resilient member coupled to the pin and adapted to be coupled to the first member.

4,799,292

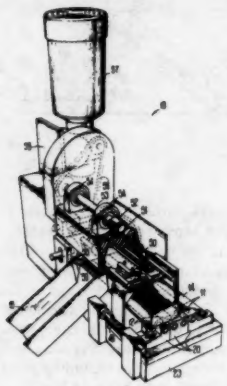
GIZZARD PEELING APPARATUS

Grover S. Harben, III, Gainesville, Ga., assignor to Centennial Machine Company, Inc., Gainesville, Ga.

Filed Mar. 25, 1988, Ser. No. 173,191

Int. Cl.[4] A22C *21/00*

U.S. Cl. 17—11 5 Claims



1. Apparatus for removing the lining from a gizzard, comprising:

a pair of laterally aligned peeling rolls defining an elongate gizzard receiving region between the rolls;

means for counter-rotating the rolls from an end thereof;

tamping means located alongside the gizzard receiving region and mounted for selective reciprocating movement toward the gizzard receiving region; and

drive means operative independently from the rolls to reciprocate the tamping means toward and away from the gizzard receiving region, so that a gizzard disposed on the rolls is periodically urged into the gizzard receiving region without exerting a periodic load on the rolls.

4,799,293

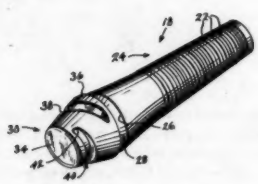
QUICK MOUNT RESILIENT FINGER FOR POULTRY PLUCKING APPARATUS OR THE LIKE

Larry S. Dewberry, Marietta, Ga., and Richard H. Schlipp, Delafield, Wis., assignors to Waukesha Rubber Company, Inc., Waukesha, Wis.

Filed Feb. 9, 1988, Ser. No. 153,994

Int. Cl.[4] A22C *21/02*

U.S. Cl. 17—11.1 R 5 Claims



1. A finger for use in a poultry processing apparatus or the like, said apparatus including one or more members adapted to receive one or more of said fingers through one or more openings provided therein, said finger being formed of a resilient material and comprising:

a shank portion having a distal end and a proximal end, said shank portion including a shoulder portion adjacent said proximal end having a transverse dimension greater than that of said opening;

a neck portion provided adjacent said shoulder portion and having a reduced transverse dimension relative thereto; and

a substantially frusto-conical head portion provided adjacent said neck portion, said head portion including a resilient base portion adjacent said neck portion and a top portion spaced from said base portion, with a side portion extending between said base portion and said top portion, said resilient base portion having a transverse diension greater than that of said neck portion and at least slightly greater than that of said opening, said side portion being provided with one or more helical threads, said finger being adapted for mounting to said member by pushing said head portion through said opening so that said base portion deforms sufficiently to allow said head portion to pass therethrough, said neck portion thereafter being disposed within said opening with said shoulder portion engaging a surface of said member adjacent said opening, said base portion returning to its undeformed state after passing through said opening so that said member is gripped between said base portion and said shoulder portion so as to retain said finger on said member.

4,799,294

APPARATUS FOR MAKING SLIVERS FROM A LAP

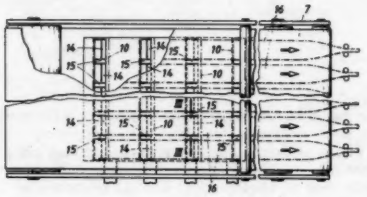
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jan. 25, 1988, Ser. No. 147,885

Claims priority, application Austria, Jan. 30, 1987, 192/87; Apr. 9, 1987, 873/87

Int. Cl.[4] D01G *15/76*

U.S. Cl. 19—99 4 Claims



1. An apparatus for making slivers having a predetermined width from a lap, comprising

lap-feeding means for feeding a lap in a predetermined direction of travel,

a plurality of carding drums, which are closely laterally spaced apart in said direction of travel so that downwardly flaring triangular spaces are defined by the peripheral surfaces of adjacent ones of said carding drums and each of said carding drums which succeds another constitutes a worker roller for cooperating with a preceding one of said carding drums,

said carding drums being operable to rotate in the same sense so that fibers are received by said carding drums from said lap-feeding means and said carding drums are adapted to throw fibers into said triangular spaces,

said apparatus further comprising

collecting means forming an air-permeable collecting surface, which extends below said carding drums, said collecting means being operable to continuously move said collecting surface in said direction of travel, and

ejection ducts communicating with respective ones of said triangular spaces and leading to said collecting surface, the improvement residing in that

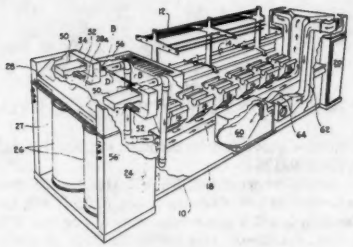
a vacuum is applied to said collecting surface adjacent to said ejection ducts only in discrete suction zones, which are spaced apart transversely to said direction of travel and have a width each which is equal to said predetermined width.

4,799,295

DRAWBOX AIR SHUT-OFF AND METHOD FOR DOFFING A TEXTILE COMBER

Dan W. Benfield, Easley, S.C., assignor to Platt Saco Lowell Corporation, Easley, S.C.

Filed Jul. 13, 1987, Ser. No. 72,328
Int. Cl.[4] B65H *54/80*
U.S. Cl. 19—159 R **11 Claims**



1. A method of controlling suction air to the drawbox of a textile comber during doffing of the type which includes a drafting element, a calender, a coiler having a coiler tube which deposits combed sliver into a delivery can below said coiler, a vacuum cleaning system which includes air suction nozzles disposed within said drawbox for cleaning said drafting element, calender, and coiler, said nozzles connected to suction line for removal of waste and air borne matter in the drawbox, said method controlling said suction air to facilitate entry of a new delivery of sliver into said coiler tube and coiler including:

placing a shut-off duct assembly in the suction line to said vacuum cleaning nozzles in said drawbox containing a valve for closing off said suction line to prevent air suction in said drawbox;

stopping said comber after coiling a prescribed amount of sliver in said delivery can;

doffing the full delivery can by replacement with an empty delivery can;

restarting said comber;

maintaining said valve in a closed position and said suction air shut-off during restart of said comber; and

opening said valve to permit air suction in said drawbox after a prescribed amount of sliver has been properly introduced into said coiler tube and into the delivery can without air interference and said comber has reached a high-speed operation.

4,799,296

CONNECTOR FOR RELEASABLE SECUREMENT TO THE FREE END OF A LIFTING STRAP

Donald D. Rasmussen, P.O. Box 250, Tualatin, Oreg. 97062

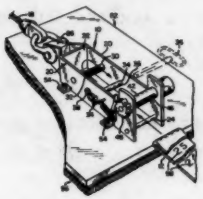
Filed Dec. 29, 1987, Ser. No. 139,579
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—68 R **8 Claims**

1. A connector comprising:

a body portion having opposite ends and a hollow interior,

stationary anchor means in said body portion arranged to receive a doubled and looped end of a strap thereover comprising free and lifting end portions and arranged to pinch the free end portion between it and the lifting end portion by a lift force on the latter,

and pin means removably mounted in said body portion arranged for insertion in the loop of the looped end of the



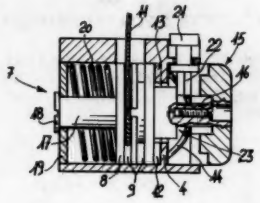
strap for holding the latter in a secured position on said body portion with the free end of the strap pinched between said anchor means and the lifting end portion and also arranged for removal from the interior of said body portion to release the strap from the body portion.

4,799,297

CLOSURE AND SECURING DEVICE, PARTICULARLY FOR SKI BOOTS

Giorgio Baggio, San Martino di Lupari, and Giuseppe De Bortoli, Montebelluna, both of Italy, assignors to Nordica S.P.A., Montebelluna, Italy

Filed Sep. 28, 1987, Ser. No. 102,182
Claims priority, application Italy, Oct. 9, 1986, 59450/86[U]
Int. Cl.[4] A43C *11/00*
U.S. Cl. 24—68 SK **10 Claims**



1. Closure and securing device, particularly for ski boots, comprising a lever having an end, said lever being associable with a ski boot and having at least one winding assembly, said winding assembly being adapted for winding at least one ski boot traction element and comprising an externally accessable knob, a pulley rotatably associated with said lever and being rigidly rotatively associated with said knob, a first gear rigidly rotatively associated with said pulley, a second gear rigidly associated with said lever, releasable engagement means adapted for mutually engaging said first gear and said second gear to prevent rotation of said pulley with respect to said lever, uncoupling means adapted for uncoupling said first gear and said second gear to allow said rotation of said pulley, a cylindrical hollow body arranged transversely with respect to said lever, proximate to said end thereof, said cylindrical hollow body being pivotally associable with a ski boot and defining a lateral shoulder, said lateral shoulder having an axial hole, said winding assembly being rotatably associated with said hollow body.

4,799,298

STRAP RETAINER

Hiroshi Matoba, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 31, 1987, Ser. No. 80,066

Claims priority, application Japan, Aug. 2, 1986, 61-118977[U]

Int. Cl.[4] A43C *5/00*; A41F *1/00*

U.S. Cl. 24—140 **2 Claims**

1. A strap retainer for retaining a strap to a substrate, comprising:

(a) a flexible plate adapted to be attached to the substrate and having a groove defined in an upper surface of said plate and extending along a peripheral edge of said plate for receiving therein a sewing thread;

(b) at least one retaining mound integral with said plate and raised above said upper surface of said plate so as to define therebetween a pair of laterally aligned apertures for the passage therethrough of the strap;

(c) a support ridge projecting from a bottom surface of said plate and extending along said peripheral edge of said plate, said ridge being disposed between said retaining mound and said groove immediately adjacent to said groove; and

(d) said plate further including at least one first ridge disposed between said support ridge and said retaining mound and extending parallel with said support ridge, and a second ridge disposed on said bottom surface thereof and extending in surrounding relation to said mound, said first and second ridges intersecting each other.

4,799,299

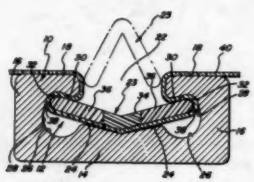
CLIP TRACK DEVICE FOR SECURING FLEXIBLE SHEETS

Ken L. Campbell, 11536 Humber Dr., Mira Loma, Calif. 91752

Filed Dec. 28, 1987, Ser. No. 138,709

Int. Cl.[4] A44B *21/00*; A47H *13/00*

U.S. Cl. 24—462 **6 Claims**



1. In combination, an improved track device and spline member used as a fastener system for securing flexible cover or sheet materials, wherein the combination comprises:

an elongated track having a base member, a pair of oppositely disposed side-wall members, and inwardly projecting rail members;

a channel defined by said base member, said side-wall members, and said rail members;

said base member being formed with a pair of inclined, inner-wall surfaces centrally positioned in said channel and having a V-shaped configuration, the outer marginal edges thereof being fluted to define oppositely positioned, recessed, longitudinal grooves;

said side-wall members being formed with inner, tapered wall surfaces, each inclined inwardly and upwardly of said channel;

said rail members being formed with inner, tapered wall surfaces that are inclined inwardly and downwardly of said channel;

a spline member having a central body member of semi-rigid material; and

a pair of wing members formed from a substantially rigid material and integrally formed with said central body member, whereby said wing members are readily repositioned to be inserted in said channel so as to lockingly engage the flexible sheet material interposed between said track and said spline.

4,799,300

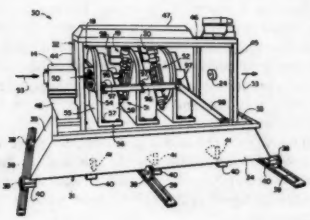
APPARATUS FOR SHAVING ELONGATE METAL STOCK

Paul M. Phillips, 11844 Rancho Bernardo Rd., Ste. 120-165, San Diego, Calif. 92128

Continuation-in-part of Ser. No. 877,314, Jun. 23, 1986, abandoned, which is a continuation of Ser. No. 561,959, Dec. 16, 1983, abandoned, which is a continuation of Ser. No. 273,479, Jun. 15, 1981, abandoned. This application Mar. 17, 1987, Ser. No. 27,323

Int. Cl.[4] B23P *17/02*; B23D *1/20*

U.S. Cl. 29—33 F **17 Claims**



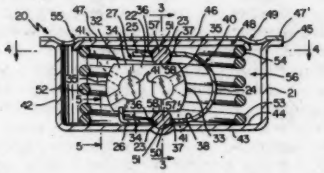
1. In an apparatus for shaving elongate metal stock such as rod, wire or the like, a plurality of radially variable segmental die assemblies through which the metal stock is longitudinally continuously passed, said die assemblies being axially spaced along the path of the metal stock and each comprising a support therefor, diametrically opposed carriages mounted on said support for radial movement toward and away from the path of the metal stock, diametrically opposed segmental shaving dies respectively secured to said carriages for common movement therewith out of and into the path of the metal stock for removing surface metal from diametrically opposed sides of the metal stock, and reciprocating drive means for moving said carriages radially inwardly and outwardly, each segmental die assembly including adjustable mechanical stop means for limiting radially inward movement of said carriages and hence the segmental dies, said reciprocating drive means including a piston-cylinder assembly connected to each carriage for effecting radially inward and outward movement of the carriage; said adjustable mechanical stop means including a stop collar on the piston of each piston-cylinder assembly and an abutment fixed in relation to the cylinder, and said abutment being in the path of said stop collar to limit the radially inward stroke of the piston-cylinder assembly.

4,799,301

METHOD OF MAKING AN OSCILLATING CRYSTAL FORCE TRANSDUCER

Douglas R. Scott; Peggy L. Goddard, and Joseph P. Wagner, all of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 14, 1988, Ser. No. 167,847
Int. Cl.[4] H01L 41/22
U.S. Cl. 29—25.35 14 Claims



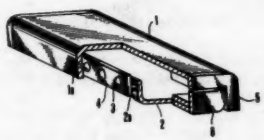
1. In a method of making an oscillating crystal force transducer comprising the steps of forming support means, providing a plate-shaped piezo-electric crystal having opposed sides and a peripheral edge means extending between said opposed sides, and forming two seating members to be carried by said support means and respectively engage said peripheral edge means of said crystal and arranged to apply a force to said crystal along a line extending through said crystal from one of said seating members to the other of said seating members, the improvement comprising the step of forming said support means to comprise a looped spring member having opposed end means spaced from each other to define the mouth of said looped spring member and respectively carry said seating members whereby said crystal is disposed in said mouth of said looped spring member between said seating members thereof.

4,799,302

METHOD OF MANUFACTURING HOLDING DEVICE OF ROLLER BEARING FOR RECTILINEAR MOTION

Yasunori Yokota, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Division of Ser. No. 863,691, May 15, 1986, Pat. No. 4,701,059.
This application May 5, 1987, Ser. No. 46,269
Claims priority, application Japan, Sep. 18, 1985, 60-204197
Int. Cl.[4] B21D 53/12
U.S. Cl. 29—148.4 C 3 Claims



1. A method of manufacturing a holding device of a rolling bearing for rectilinear motion in which a plurality of rolling members are rectilinearly arranged at predetermined regular intervals in track grooves or track surfaces, said method comprising the steps of:

preparing a molding die having a cavity with a substantially rectangular cross section;

disposing a plurality of window pins as cores into said cavity at predetermined positions at substantially regular intervals in the longitudinal direction of said molding die;

injecting and molding a plastic material into said cavity of the molding die at a high pressure and at a high temperature; and

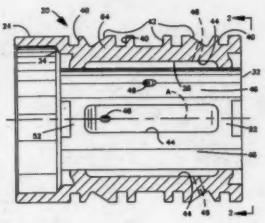
thereafter, alternately pulling out said window pins one by one in their axial directions adjacent pins pulled in the opposite directions.

4,799,303

METHOD OF MAKING A VALVE SLEEVE

Thomas K. Prinz, St. Clair Shores, and Stephen A. Dier, Fraser, both of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Aug. 26, 1987, Ser. No. 89,599
Int. Cl.[4] B21D 53/10
U.S. Cl. 29—157.1 R 12 Claims



7. A method of manufacturing a valve sleeve comprising the steps of:

forming a plurality of grooves extending axially along an inner surface of a tubular member, which grooves extend through at least one end surface of the tubular member and have a base surface located between the inner surface of the tubular member and an outer surface of the tubular member;

displacing material of the one end surface of the tubular member adjacent each of the plurality of grooves radially inwardly to close the ends of the grooves and to locate a portion of the material radially inwardly of the inner surface; and

thereafter, moving at least a portion of the displaced material located radially inwardly of the inner surface radially outwardly and along the longitudinal axis of said member to form a seal land at the one end of each groove.

4,799,304

METHOD FOR ASSEMBLING A WHEEL FOR A BICYCLE

Akihiko Kosaka, Ibaragi, Japan, assignor to Araya Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP86/00351, § 371 Date Feb. 25, 1987, § 102(e) Date Feb. 25, 1987, PCT Pub. No. WO87/00125, PCT Pub. Date Jan. 15, 1987
PCT Filed Jul. 10, 1986, Ser. No. 31,020
Claims priority, application Japan, Jul. 11, 1985, 60-153591; Jul. 11, 1985, 60-153592; Jul. 19, 1985, 60-160968; Feb. 1, 1986, 61-20478; Feb. 1, 1986, 61-20479
Int. Cl.[4] B21F 39/00
U.S. Cl. 29—159.02 6 Claims

1. A method for assembling a wheel for a bicycle comprising:

aligning spokes mounted on a hub;

leasing the aligned spokes to form an assembly;

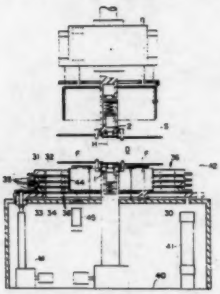
transferring the assembly of hub and leased spokes to a device for loosely tightening said leased spokes;

loosely tightening the spokes of the assembly of the hub and leased spokes; and

fastening the loosely tightened spokes to complete the tightening of the loosely tightened spokes;

the aligning step further comprising rotating the hub having two spoke mounting plates to thereby radially align the spokes mounted on each spoke mounting plate at the hub and retaining the spokes in an alignment by retaining means provided concentrically with the hub; said retain-

ing means comprising a pair of retaining bodies opposing each other from the top and bottom of the hub, said retaining bodies being paired rotatably with respect to the hub, each said retaining body being composed of spacing-holding means which fit between adjacent aligned spokes, said spacing-holding means being positioned externally in the neighborhood of a spoke mounting plate of the hub, said spacing holding means projecting toward the spokes when the spokes are in the aligned state, thereby retaining the spoke aligned state in the assembly of the wheel;



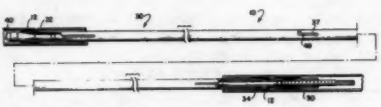
the leasing step further comprising supporting first, second, third and fourth spokes on first, second, third and fourth supporting annuli in an initial position, lifting said first, second, third and fourth annuli, moving tentatively the first, second, third and fourth annuli until they are opposed to the second, first, fourth and third spokes respectively, lowering said first, second, third and fourth spokes onto said second, first, fourth and third annuli respectively, and moving relatively said first, second, third and fourth annuli to the initial position whereby the first and second spokes are crossed and the third and fourth spokes are crossed.

4,799,305

TUBE PROTECTION DEVICE

Michael G. Brunner, Penn Hills Township, Allegheny County, and Gregory L. Calhoun, Allegheny Township, Armstrong County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 686,805, Dec. 27, 1984, abandoned.
This application Mar. 10, 1987, Ser. No. 23,947
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—265 **8 Claims**



1. Apparatus for protecting a region of a hollow tube, having interior and exterior wall surfaces and an open end, from deformation during withdrawal of the tube through an aperture in a support structure which frictionally engages the exterior wall surface of the tube, the interior wall surface of the tube having a predetermined diameter, comprising:

a generally cylindrical device of a metallic material and of a fixed, predetermined axial length and having first and second opposite ends, said device being insertable, beginning at said first end, fully into the tube to a predetermined position therein at which said first and second opposite ends of said device are contiguous to respective portions of the interior wall surface of the tube and span, therebetween, the region of the tube to be protected from deformation, said device comprising first and second gripper portions disposed at the corresponding, said first and second opposite ends of said device, said gripper portions defining the maximum diameter of the device and being elastically expansible from a first, relaxed condition, of a first outer diameter less than the predetermined diameter and thereby displaced from the interior wall surface of said tube during said insertion, to a clamped condition of a second outer diameter greater than the predetermined diameter at said predetermined position of said device and thereby releasably and frictionally engaging the respective, said contiguous portions of the interior wall surface of the tube, and an actuator comprising a first portion extending coaxially through said generally cylindrical device and having a first end disposed contiguous to the first end of said device and a second end extending outwardly from the second end of said device, and a second portion received on and rotatably relatively to the second end of the first portion, the actuator being operable through rotation of the second portion thereof, relatively to the first portion, in a first sense for actuating said first and second gripper portions to expand substantially simultaneously from said relaxed condition to said clamped condition and operable through rotation in a second, opposite sense to permit said first and second gripper portions to contract from said clamped condition to said relaxed condition;

an adjustable length mechanism, insertable into the tube from the open end thereof and comprising first and second ends, the mechanism being selectively connectable at its first end with said actuator for inserting the device into the tube to the predetermined position with the second end extending exteriorly of the open end of the tube and adapted for being driven at its second end selectively in rotation, and correspondingly, selectively rotating said second portion of said actuator in said first and second, opposite senses; and

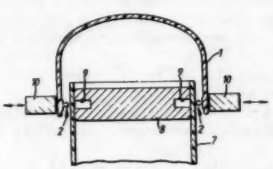
a holding device, disposed coaxially within and extending through said adjustable length mechanism and having a first end selectively connectable with the second end of the first portion of the actuator, the holding device having a second end at the exterior of the open end of the tube and being adapted for being restrained against rotation at its second end and correspondingly restraining the first portion of the actuator against rotation during selective rotation of the second portion of the actuator by the adjustable length mechanism.

4,799,306

METHOD OF SECURING HANDLES TO PLASTICS CONTAINERS

Malcolm G. Collins, Oxforshire, and Christopher S. Parry, Hertfordshire, both of England, assignors to Metal Box plc, United Kingdom

Filed May 19, 1988, Ser. No. 196,154
Claims priority, application United Kingdom, Jun. 16, 1987, 8713968
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—453 **6 Claims**



1. A method of securing a handle to a preformed plastics

container body, wherein the handle is in the form of an elongate strap having a lateral projection at at least one end thereof in the form of a spigot having a head portion at its free end and a shank connecting the head portion to the strap; the diameter of the shank being less than the diameter of the head portion, the method comprising the steps of:

(a) locally supporting the wall of the container body on the inside by means of a female die having a recess of diameter greater than that of the head portion of the spigot and opening against the wall of the container body;

(b) pushing the spigot into the die from the outside of the container body such that material from the container body wall is plastically deformed into the recess of the die around the spigot head portion to form a socket; and

(c) squeezing the wall of the container body in the region of the socket such that material from the wall of the container body is plastically deformed into the annulus surrounding the shank of the spigot to retain the head portion of the spigot in the socket.

4,799,307

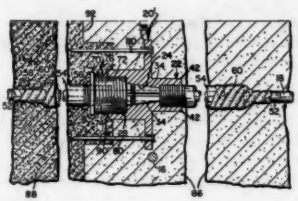
ANCHOR APPARATUS FOR A TENDON IN PRESTRESSED CONCRETE SLAB

Gordon H. Reigstad, North St. Paul; A. Norris Breivik, Forest Lake, and Hanley S. Reigstad, Sunburg, all of Minn., assignors to Tech Research, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 870,654, May 30, 1986, abandoned, which is a continuation of Ser. No. 785,333, Oct. 7, 1985, abandoned. This application Oct. 7, 1986, Ser. No. 916,151

Int. Cl.[4] B21D *39/00*

U.S. Cl. 29—452 **1 Claim**



1. A method for using an anchor device to hold and protect a tendon in a stressed condition in a prestressed concrete slab, said tendon having a fixed end, said tendon having a corrosion resistant covering, said covering being incomplete in a region around where said device is attached to said tendon, said device including an anchor body having a central passage for receiving said tendon and a central section for receiving wedges to hold said tendon with respect to said body, said anchor body further having means for resisting longitudinal movement with respect to said slab, said anchor body additionally having a first portion on a first side of said resisting means and a second portion on a second side of said resisting means, said device further including a conduit having first and second end portions and means for sealingly attaching said first end portion to said first portion of said anchor body, said device also including means for sealing said second end portion of said conduit to said covering on said tendon, said device still further including means for sealingly closing said central passage at said second portion of said anchor body, said method comprising the steps of:

(a) attaching with said attaching means the first end portion of said conduit to said first portion of said anchor body, fixing said anchor body at a predetermined location, and passing said tendon through said conduit and the central passage of said anchor body;

(b) sealing the second end portion of said conduit to said covering on said tendon with said sealing means;

(c) casting concrete with respect to said anchor body and said tendon on said first side of said resisting means so that said central passage at said first portion of said anchor body is free of concrete;

(d) placing wedges in said central passage of said anchor body between a wall of said central passage and said tendon and stressing said tendon with respect to said fixed end of said tendon, said wedges holding said tendon in the stressed condition; and

(e) fitting a reducer to the second portion of said anchor body, said reducer having first and second ends, said first end sealingly attaching to said second portion of said anchor body;

(f) fitting a second conduit into said second end of said reducer, said second conduit having first and second end portions with said first end portion sealingly attaching to said second end of said reducer; and

(g) sealing the second end portion of said second conduit to said covering on said tendon with said sealing means;

whereby said tendon is held in a stressed condition and sealed against corrosive fluids in said region around where said anchor body with said wedges attaches to said tendon.

4,799,308

AUTOMATIC TOOL CHANGER

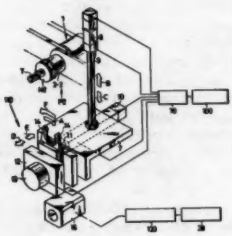
Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Japan

Filed Aug. 27, 1987, Ser. No. 90,005

Claims priority, application Japan, Aug. 28, 1986, 61-199972

Int. Cl.[4] B23Q *3/157*

U.S. Cl. 29—568 **8 Claims**



1. An automatic tool changer for exchanging a plurality of tool holders for mounting on a machine tool spindle comprising:

transfer means for transferring a selected tool pot of a plurality of tool pots to a first transfer point, each of said tool pots being adapted to receive one of the plurality of tool holders, said plurality of tool holders being set in the tool pots in a fixed address manner so that the tool holders are returned to their original tool pots after use;

holding means, located between said first transfer point and the spindle, for holding one of the tool holders before and after use on the spindle;

a first changer, located between said first transfer point and said holding means, for exchanging a first selected tool holder set in the selected tool pot with a second tool holder held by said holding means and for returning said second tool holder to its original tool pot;

a second changer, located between said holding means and said spindle, for exchanging the selected tool holder held by said holding means for a tool holder mounted on the spindle, said second changer including a swing arm having a plurality of pawls, each of said pawls being adapted to engage and carry one of the tool holders for transfer between said holding means and the spindle, a movable block and a bar and wherein said swing arm is rotatably

mounted on said movable block and said movable block is mounted on said bar for rotation relative to said bar; and

actuation means, for rotating and axially moving said bar, said actuation means including a first cam for moving said bar axially so as to shift the swing arm linearly and a second cam for rotating said bar about its axis so as to swing said swing arm, whereby said swing arm is rotated and linearly moved.

4,799,309

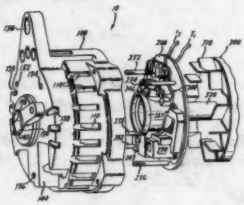
METHOD OF MAKING A RECTIFIER AND CONTROL MODULE FOR AN ALTERNATOR

Carl Cinzori, Dearborn Heights; Carl Williams, Jr., Livonia; Clair E. Mitchell, Detroit, and David L. Striker, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 24, 1987, Ser. No. 137,774

Int. Cl.[4] H02K *15/00*

U.S. Cl. 29—596 **10 Claims**



1. A method of assembling a rectifier circuit onto a conducting plate member for installation within the housing of a vehicle type alternator having a fixed set of stator windings and a rotor mounted field winding, including the steps of:

providing an electrically and heat conducting plate member;

coating a first predetermined pattern are of said plate member with an electrically insulating layer that leaves a second predetermined pattern area exposed;

masking a predetermined portion of said first predetermined pattern area to expose the remainder of said insulating layer;

depositing an electrically conducting film on the exposed surfaces of said plate member and said insulating layer in a third predetermined pattern to form conductor runs that are respectively and separately bonded to said conducting plate or said insulating layer;

providing a first predetermined number of like rectifier diode elements each having distinctive anode and cathode terminals disposed on opposite sides thereof;

bonding the anode terminals of a portion of said predetermined number of said rectifier diode elements directly to preselected ones of said conductor runs that are bonded to said conducting plate;

bonding the anodes of the remainder of said rectifier diodes directly to preselected ones of said conductor runs that are bonded to said insulating layer;

providing a second predetermined number of electrically conducting elements configured to extend from the cathode terminals, of rectifier diodes bonded to said conducting plate, to the preselected ones of said conductor runs bonded to said insulating layer;

electrically bonding an electrically conducting element to both the cathode terminal of each of said rectifier diodes bonded to said conducting plate and to a preselected conductor run onto which the anode terminal of a corresponding rectifier diode is bonded;

providing a common bus bar conductor formed to be connected to the DC output terminal of said alternator, having exposed portions and being mounted within an insulated means;

mounting said common bus bar conductor insulating means on said plate so that exposed portions of said bus bar conductor are adjacent the cathode terminals of said rectifier diodes bonded to said conductor runs bonded to said insulating layer; and

bonding said common bus bar conductor to said adjacent cathode terminals.

4,799,310

METHOD FOR MANUFACTURING A BAR ANTENNA

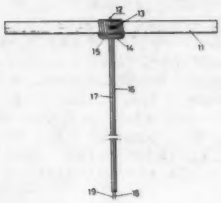
Atsushi Isobe, Kopofurukawa 102, 17-13, Haneda 3-chome, Ota-ku, Tokyo 144; Masahiko Isobe, Sakuraiso, 6306 Tsujido, Fujisawa-shi, Kanagawa 251, and Naoki Isobe, 27-11, Haneda 5-chome, Ota-ku, Tokyo 144, all of Japan

PCT No. PCT/JP85/00262, § 371 Date Dec. 30, 1986, § 102(e) Date Dec. 30, 1986, PCT Pub. No. WO86/06868, PCT Pub. Date Nov. 20, 1986

PCT Filed May 10, 1985, Ser. No. 15,372

Int. Cl.[4] H01F *41/06*

U.S. Cl. 29—605 **12 Claims**



1. A method of manufacturing a bar antenna having a magnetic core incorporated therein, characterized in that a covering material on each one end portion of parallel covered cords is removed, the parallel covered cords are separated from each other by a length required for winding on a magnetic core, the portions wherefrom said covering material is removed are connected together, a winding start position is set beforehand so that an end portion of the magnetic core can be matched in position with the winding end of a coil, one cord, a connecting portion and the other cord are wound in this sequence consecutively from said start position to the end portion of the magnetic core, starting from the base of the separated portions of the cords, so as to form the coil, and thereafter the coil thus formed is transferred to a prescribed position, while the portions of the parallel covered cords not separated from each other are used as an extension cord as they are.

4,799,311

APPARATUS FOR ATTACHING SUTURE TO SURGICAL NEEDLE

Kanji Matsutani, Tochigi, Japan, assignor to Matsutani Seisakusho Co., Ltd., Tochigi, Japan

Filed Feb. 23, 1988, Ser. No. 159,212

Claims priority, application Japan, Feb. 26, 1987, 62-41389

Int. Cl.[4] B21D *39/00*; B41G *1/06*

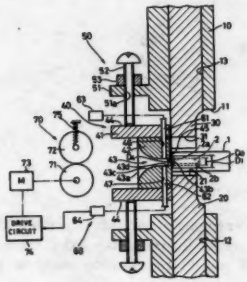
U.S. Cl. 29—209 **16 Claims**

1. An apparatus for attaching an end of a suture to a bore formed in a proximal end of a surgical needle and extending along an axis of the surgical needle, said apparatus comprising:

a pair of staking dies, at least one of said staking dies being movable toward and away from the other staking die;

guide means arranged adjacent a side surface of at least the other staking die, said guide means having a stopper surface with which a proximal end face of the surgical needle is engageable to position the surgical needle in a direction along the axis thereof, said guide means having a guide passage extending substantially perpendicularly to said stopper surface, for guiding the end of the suture, said guide passage having an inlet and an outlet, said outlet

opening to said stopper surface in confronting relation to a space between said staking dies, said guide passage being provided with a tapered portion having a cross-sectional area decreasing toward said outlet; and



positioning means for positioning the proximal end of the surgical needle in a direction perpendicular to the axis of the surgical needle so as to bring the bore in the proximal end of the surgical needle substantially into alignment with said outlet of said guide passage of said guide means.

4,799,312

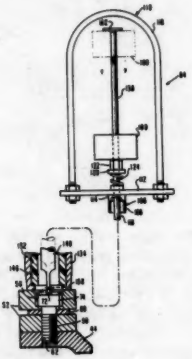
TOOL FOR REPLACING LOCKING SCREWS IN A NUCLEAR FUEL ASSEMBLY

John M. Shallenberger, Fox Chapel Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 870,584, Jun. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 762,733, Aug. 5, 1985, abandoned. This application Jul. 29, 1987, Ser. No. 79,208

Int. Cl.[4] B23D *19/00*

U.S. Cl. 29—723 **5 Claims**



1. A tool for straightening an arched pin into one of a pair of slots orthogonally defined in a screw head, comprising:

(a) an elongated positioning and forcetransmitting rod-like member;

(b) means mounted on one end of said rod-like member for applying an axially directed force to said member;

(c) an elongated sleeve mounting said rod-like member for reciprocal movement within said sleeve and having an end adapted to seat about said screw head;

(d) a tool handle mounted at one end of said sleeve adjacent said force-applying means on said one end of said rod-like member; and

(e) a pin setting tool bit connected to an opposite end of said rod-like member being indexible with one of said slots in said screw head and for delivering said impact force to said arched pin in said other screw head slot.

4,799,313

APPARATUS FOR THREADING A SLIDER ONTO OPPOSED STRINGERS FOR SLIDE FASTENER

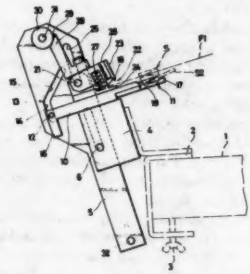
Yoichi Horikawa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

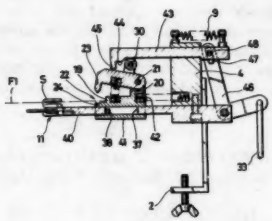
Filed Feb. 2, 1988, Ser. No. 151,644

Claims priority, application Japan, Feb. 3, 1987, 62-24341

Int. Cl.[4] A41H *37/06*

U.S. Cl. 29—768 **15 Claims**





1. An apparatus for threading a slider onto a pair of stringers for a slide fastener, comprising:

(a) a slider holder disposed in a longitudinal path of the pair of stringers;

(b) aligning means disposed downstream of said slider holder in the longitudinal path for laterally aligning respective leading ends of the opposed stringers with each other which stringers have been threaded through the slider; and

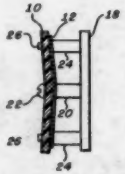
(c) a clamp disposed between said slider holder and said aligning means for holding the opposed stringers in their relative position, said clamp and said slider holder being relatively movable away from each other along the longitudinal path of the stringers.

4,799,314

METHOD OF MOUNTING A PRINTED CIRCUIT BOARD

Ralph Lake, Yorba Linda, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 2, 1987, Ser. No. 69,549
Int. Cl.[4] H05K 5/00, 3/36
U.S. Cl. 29—846 3 Claims



1. A method for mounting a printed circuit board comprising:

providing a printed circuit board having an electrically conductive grounding path printed thereon, a hole centrally disposed within said board, and a plurality of peripheral holes engaging said grounding path and extending through said board;

providing a conductive base plate with a centrally disposed threaded stud aligned with said hole of said board, said stud having a first predetermined longitudinal dimension and said plate configured to face said electrically conductive grounding path,

providing a plurality of integrally formed supporting members on said mounting plate, said members formed orthogonal to said plate, and said members disposed at the periphery of said plate so as to cooperate with said peripheral holes of said board,

providing ones of said supporting members with a flange for accepting ones of said peripheral holes and a shoulder for supporting said board, said shoulder longitudinally disposed on said member at a second predetermined dimension greater than said first predetermined dimension; and

assembling said plate and said board by inserting a flange of at least one of said supporting members through a cooperating peripheral hole of said board, inserting a screw through said centrally disposed hole of said board and engaging said stud, and tightening said screw so that said board is compressively engaged against said supporting members, thereby electrically engaging said conductive grounding path and said conductive base plate.

4,799,315

KNIFE SUPPORT AND CUTTING GUIDE

Steven M. Ziegler, 5252 Wethersfield Rd., Jamesville, N.Y. 13078

Filed Jun. 8, 1987, Ser. No. 59,752
Int. Cl.[4] B26B 3/00
U.S. Cl. 30—293 8 Claims

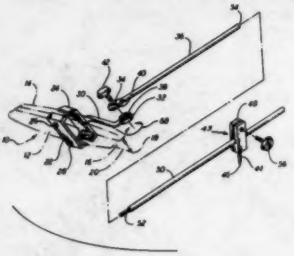
1. A knife support and guide adapted to hold a conventional mat knife having a handle and essentially flat blade of predetermined dimensions, said support and guide comprising:

(a) clamp means adapted to releasably engage and hold said knife handle in a fixed, predetermined orientation relative to said clamp means;

(b) an arm fixedly attached to said clamp means and having an axis lying in a first plane;

(c) an elongated rod having a linear axis lying in a second, vertical plane;

(d) means for releasably attaching said arm to said rod in adjustable angular orientations of said first and second planes, including first and second circular members fixedly attached to end portions of said arm and said rod, respectively, and means for releasably holding said circular members in superposed, contacting relation in an adjustable rotational orientation; and



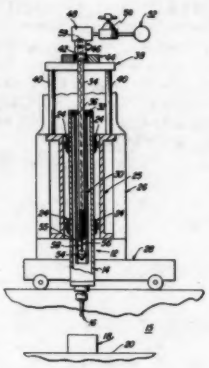
(e) a surface-engaging member engageable with said rod and including means for releasably fixing the position of said member at any desired position along the length of said rod.

4,799,316

COORDINATE MEASURING MACHINE WITH A PROBE SHAFT COUNTER BALANCE SYSTEM

John J. Tuss, Englewood, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 28, 1987, Ser. No. 139,532
Int. Cl.[4] G01B 5/20
U.S. Cl. 33—503 8 Claims



1. A coordinate measuring machine (10) of the type including a probe shaft (14) supported for vertical movement over a horizontal surface (20) that is adapted to support an object (18) to be measured by the probe, and a counterbalance system for the probe shaft (14) that includes: a piston (54,54*a*) and vertically extending cylinder (30,30*a*) into which said piston (54,54*a*) is fit, said cylinder having an upper end wall (32,32*a*) to create a pressure chamber (58,58*a*) above said piston (54,54*a*), said pressure chamber (58,58*a*) supplied from fluid pressure supply means (48,48*a*); structure (38,38*a*) relatively fixed with respect to said probe; and, means securing said relatively fixed structure (38,38*a*) to said piston (54,54*a*), so that fluid pressurizing of said pressure chamber (58,58*a*) enables counterbalancing of the weight of the probe shaft (14), said counterbalance system characterized by:

an elongated tube (34,34*a*) entering into said cylinder (30,30*a*) from the upper end thereof, extending along said cylinder (30,30*a*) and terminating above said piston (54,54*a*), said relatively fixed structure (38,38*a*) mounting the upper end of said tube (34,34*a*) protruding from said

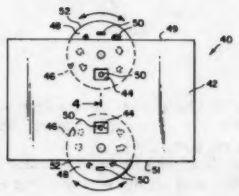
cylinder (30,30a) allowing the introduction of pressurized fluid through said tube (34,34a) to pressurize said chamber (58,58a).

4,799,317

STENCIL DEVICE FOR POST CARDS

Felicia M. Christian, 1007 Dekalb St., Apt. 1A, Norristown, Pa. 19401, and George Spector, 233 Broadway, Rm 3815, New York, N.Y. 10007

Filed Nov. 2, 1987, Ser. No. 115,349
Int. Cl.[4] B43L *13/02*
U.S. Cl. 33—565 **2 Claims**



1. A stencil device for a post card and the like, which comprises:

(a) a thin rectangular body member having two spaced apart windows above two spaced apart bottom curved recesses, one of said windows and one of said recesses near top edge and other of said windows and other of said recesses near bottom edge with each of said windows extending through said body member into each of said recesses;

(b) two stencil wheels, each having a plurality of radially spaced apart and different geometric shaped openings, each of said wheels fit within each of said recesses of said body member so that each of said openings can line up with one of said windows while a portion of circumference of each of said wheels extend past top and bottom edges of said body member; and

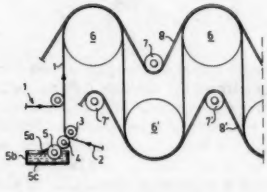
(c) two pivot pins, each extending through said body member and into center of one of said stencil wheels so that said stencil wheels can each be turned within said recesses to create different shapes on the post card and the like when a person outlines said openings in said stencil wheels through each of said windows with a writing instrument.

4,799,318

ARRANGEMENT IN THE DRYING SECTION OF A PAPER MACHINE

Torbjörn Hansson, Växjö , Sweden, assignor to Fläkt AB, Nacka, Sweden

Filed Mar. 18, 1987, Ser. No. 27,396
Claims priority, application Sweden, Mar. 19, 1986, 8601291
Int. Cl.[4] D06F *58/00*
U.S. Cl. 34—117 **20 Claims**



1. A paper drying apparatus comprising:

means for guiding a moving paper web along a path through said drying apparatus including web engaging drying cylinders mounted in said drying apparatus;

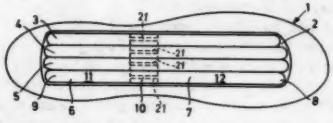
means for controlling shrinkage of said web, said means including at least one strap mounted for movement with said web, said strap including a first section for adhering attachment to an edge of said web and a second section for engagement with a co-acting means on said drying cylinders; and

means for coating an adhesive layer between said strap and said web for adhering said strap to said edge of said web.

4,799,319

DEVICE FOR WARMING THE FOOT OF A WEARER

Max Zellweger, Alte Wollerauerstrasse 36, CH 8805 Richterswil, Switzerland

Filed Jun. 16, 1987, Ser. No. 62,676
Claims priority, application Switzerland, Jun. 18, 1986, 2459/86
Int. Cl.[4] A43B *07/02, 13/18*
U.S. Cl. 36—2.6 **10 Claims**

1. A device for warming the foot during walking comprising:

an inner sole defining a plurality of longitudinally communicating closed cavities which deform under compressive stress, said cavities each containing a fluid therein, and

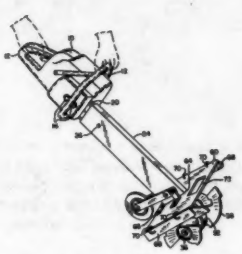
a flow restrictor located in a region of a arch of the foot and including at least one restrictive shutter whereby heat is generated as a fluid passes through said flow restrictor during alternating application of stresses on said cavities during walking.

4,799,320

APPARATUS FOR DIGGING SURFACE TRENCHES IN THE GROUND

Raymond M. West, 2807 NE. Brazee, Portland, Oreg. 97212, and Robert W. Steele, 1185 Hamilton Heights, Corvallis, Mont. 59828

Continuation of Ser. No. 001,914, Jan. 9, 1987, abandoned. This application Feb. 23, 1988, Ser. No. 161,403
Int. Cl.[4] E02F *5/02*
U.S. Cl. 37—80 R **1 Claim**



1. Apparatus for digging surface trenches in the ground comprising:

a power unit having operating handles and a laterally projecting output shaft,

an elongated rigid bar secured to one end to said power unit and having an opposite free forward end,

an elongated housing secured to said bar and enclosing and reinforcing said bar forwardly of said power unit to said free end,

said housing being enlarged relative to said bar to form upper and lower longitudinal passageways therebetween and having a length so as to extend beyond the free end of said bar,

a sprocket wheel secured to said output shaft,

bearing means secured to the extended end of said housing and projecting laterally outwardly from said housing in spaced relation from the free end of said bar and supported fully by said housing.

a cross shaft journaled in said bearing means for support independently of said bar,

a sprocket wheel fixed to said shaft substantially in alignment with the bar and beyond the end of said bar,

a cross link motorcycle-type chain trained around said sprocket wheel and traveling longitudinally through said passageways,

digging means on said shaft for digging trenches when the power unit is operated,

a rigid arm having an inner end secured to said housing adjacent the other end of said housing,

a ground engaging wheel secured to said arm for engaging the ground for supporting the housing at an incline so that said digging means contact the ground when revolved,

an upright flexible guard secured to said housing adjacent said digging means between said digging means and said power unit to protect the operator from debris thrown by said digging means,

said guard being of a flexibility whereby to be self-sustaining and operative to protect the operator but at the same time to allow larger size debris portions to distort it and pass thereby,

forwardly projecting side flaps on said guard,

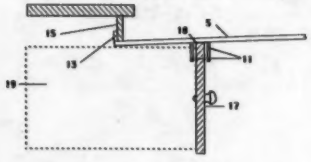
and a hand engaging aperture in an upper portion of said guard.

4,799,321

IRONING BOARD

Leo D. Johnson, 405 - 1445 W. 14th Ave., Vancouver, Canada V6H 1R5

Filed Jan. 16, 1987, Ser. No. 4,199
Int. Cl.[4] D06F *81/00*
U.S. Cl. 38—103 **6 Claims**



1. An ironing board that is adapted to be supported in a standard drawer having a vertical face piece comprising:

(a) an ironing board having an upper planar ironing surface with a first working end, a planar undersurface parallel to said upper surface, and a second end distant from said first end;

(b) a transverse ridge adjacent the second end of said ironing board distant from said first end and extending vertically from said upper ironing surface; and,

(c) two parallel ridges on the undersurface of said ironing board which together cooperate to form a groove adapted to receive the vertical face piece of the drawer.

4,799,322

TANGLE RESISTANT LOCK PIN

Robert A. Sardinskas, Bethany, Conn., assignor to Sarco Mfg. Co., Inc., Bethany, Conn.

Filed Sep. 25, 1987, Ser. No. 100,982
Int. Cl.[4] A44C *3/00*
U.S. Cl. 40—1.5 **20 Claims**

1. A lock pin for a badge shell having a round periphery and an inwardly bent skirt along said periphery forming an open back, said lock pin comprising:

a length of resilient wire having a fastening portion with a lower pointed end on the wire first free end adapted to extend at least partially across the open back of said badge shell to fasten said badge to a garment;

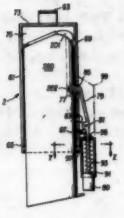
said wire having a shell securing portion, connected at a first end to the upper end of said fastening portion, extending in a closed generally planar path conforming at least partially to the curvature of the inner periphery of said badge shell completely around said fastening portion and terminating in the wire second free end comprising a locking tab extending outwardly from the plane of said shell securing portion for removably locking said second free end to said fastening portion upper end, said locking tab further adapted to bear against the inward side of the shell securing portion when the lock pin is inserted into said badge shell to resist removal of said lock pin from said badge shell.

4,799,323

MAGAZINE CARRIER FOR USE ON FIREARMS OR OTHER SUPPORT

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818

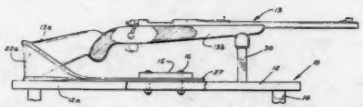
Filed Apr. 14, 1988, Ser. No. 181,413
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—90 **14 Claims**



1. A carrier for a cartridge magazine, said carrier comprising: a housing adapted for slideably encompassing a magazine installed therein; means for attaching said housing to a supporting structure; pivotable latch means on said housing, said latch means adapted at a first orientation to prevent said magazine from sliding out of said housing; said latch means adapted at a second orientation to permit said magazine to slide out of said housing; and releaseable detent means adapted at a first position to prevent movement from said first to said second orientation, said detent means positioned on said latch means; said

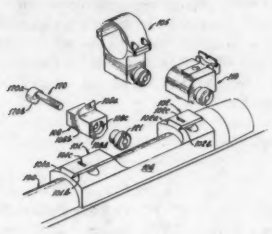
detent means adapted at a second position to permit said movement.

4,799,324
FIREARM RECOIL ATTENUATOR AND METHOD
Nicholas L. Nodo, Rte. 1, Box 39, Rice, Minn. 56367
Filed Jan. 11, 1988, Ser. No. 141,830
Int. Cl.[4] F41C *29/00*
U.S. Cl. 42—94 2 Claims



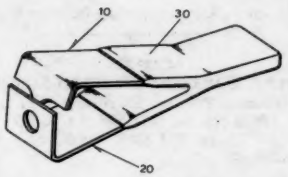
1. A firearm recoil attenuating device, comprising an elongated support platform member
a socket member of flexible non-stretchable material having a vertical back wall and having forwardly extending strap members having superposed angled end portions,
means securing said end portions to said support member, and
an elevating means upstanding from said support member to elevate a firearm into sighting position.

4,799,325
AUXILIARY RIFLE SIGHT
Raymond F. Booze, 8539 Cole St., Downey, Calif. 90242
Filed Nov. 10, 1987, Ser. No. 119,021
Int. Cl.[4] F41G *1/00, 11/00*
U.S. Cl. 42—100 26 Claims



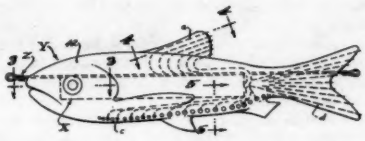
1. An auxiliary open rifle sight arrangement for replacing the telescope of a rifle having telescope mounting elements attached thereto or integral therewith at the receiver thereof for supporting a telescope relative to the rifle receiver at at least two spaced apart points generally corresponding to the front and rear portions of the telescope barrel, said arrangement comprising:
rear open sight means configured for fitting into coacting interengagement with the pre-existing geometrically configured rear portion of the telescope mounting element;
coupling means for coactingly engaging said rear sight means and existing portions of the rear portion of the telescope mounting elements; and
front open sight means configured, dimensioned and arranged for coacting engagement with and mounting to existing portions in the front portion of the telescope mounting elements of the rifle, said front sight means including a sighting member for alignment with the rear sight means for use as a rifle sight in lieu of the telescope.

4,799,326
FISH HOOK EYE CLEANER
Miles A. Mertens, P.O. Box 1753, Fond du Lac, Wis. 54935
Filed Dec. 8, 1986, Ser. No. 939,317
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 5 Claims



1. A work piece comprising a fishing jig having a generally circular eye to be cleared of obstruction, in combination with a device for clearing a projecting eye on a work piece, said eye being generally circular and having a center area intended to be open,
said clearing device comprising a tong-like device with two strip portions each having a free end and an end where the two strip portions are joined to each other and capable of approaching each other at their free ends,
an inner tab and an outer tab at the free ends of respective strip portions, each said tab being substantially perpendicular to the respective strip portion of which it is a part;
said tabs being positioned so that when said strip portions are pressed towards each other, the inner tab passes behind and substantially parallel to the outer tab at a distance equal to the distance to the center of said eye of said fishing jig;
said inner tab having a projecting point formed on its free edge sized to fit within said eye;
said outer tab having an opening through which the eye which is to be cleared may be inserted;
said opening being located in a plane including the path the point takes when it passes behind said outer tab;
whereby when said eye of said workpiece is in said opening and said strip portions are pressed towards each other, said point and said inner tab passes behind, substantially parallel to, and across the entire width of said opening and the said point passes through said eye inserted in said opening;
said strip portions being joined so that when said strip portions are released, said strip portions return to their original positions and said point located on said inner tab does not obstruct said opening in said outer tab.

4,799,327
BATTERY POWERED FIBER OPTIC FISH LURE
Mark A. Treon, 7085 Eastondale Ave., Long Beach, Calif. 90805
Filed Aug. 6, 1987, Ser. No. 82,272
Int. Cl.[4] A01K *85/01*
U.S. Cl. 43—17.6 9 Claims



1. An illuminated fish lure in the form of sea life and the like, and including;
a light source module having an electric battery, a light emitting means and a manipulatable ON and OFF switch-

ing means in series circuit through the battery and light emitting means.

a body in the form of said sea life and of depressible material encapsulating the light source module and with depressible sides, overlying said switching means for alternately opposite manipulaton of said switching means to ON and OFF positions, and the light emitting means being visible from the body,

and there being a leader extending from the body.

4,799,328

FISHING BOBBER WITH SCENT EMISSION

Jeffrey R. Goldman, 195 Lark St., Albany, N.Y. 12210

Filed Sep. 14, 1987, Ser. No. 95,769

Int. Cl.[4] A01K *93/00*

U.S. Cl. 43—42.06 **5 Claims**

1. A fishing bobber with scent emission comprising:

a shell having upper and lower parts, the lower part containing at least one or more water receiving and discharging ports;

absorptive material within the shell;

a retention-pressure plate moveable between an advanced and retracted position, movement of said pressure plate to said advanced position depressing said absorptive material;

means for directing a fish-attracting substance into the absorptive material.

4,799,329

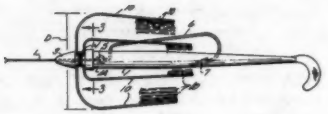
LURE WITH SKIRT OF PLIABLE FILAMENTS

Steven L. Paulsen, 1151 E. 16th St., McMinnville, Oreg. 97128

Filed Aug. 17, 1987, Ser. No. 87,329

Int. Cl.[4] A01K *85/00*

U.S. Cl. 43—42.28 **2 Claims**



1. A fish lure comprising,

an elongate pliable body,

a hook carried by said body and adapted for attachment to a leader,

an elongate head of metallic material at one end of said body and having a bore lengthwise therethrough and a recess extending about said head, an end recess formed within one end of said head,

pliable strands having portions in place in said recess,

securement means extending about the strands and confining same in place in said recess whereby said portions of the strands located proximate the head of the lure will project outwardly from the head, and

said elongate pliable body including a forward end segment terminating forwardly within said end recess of said head.

4,799,330

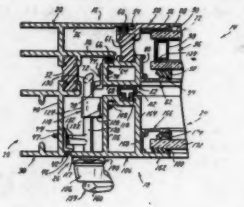
SASH LOCKING AND SEALING ASSEMBLY

Timothy R. Hudson, Cassville, Mo., assignor to Efco Corporation, Monett, Mo.

Filed Jun. 8, 1987, Ser. No. 59,042

Int. Cl.[4] E05C *7/02*

U.S. Cl. 49—62 **29 Claims**



1. An assembly for holding an exterior sash and an interior sash of a window against movement away from a casing located about the exterior and interior sashes, the sashes being movably mounted to the casing so that the sashes can be positioned within the casing and the sashes can both be moved to the interior of the casing to open the window, the casing having an interior side and exterior side, the locking assembly comprising:

(a) means for latching, said latching means having means for locking the exterior sash to the interior sash so that the exterior and interior sash move together;

(b) said latching means having means for locking the interior sash to the casing to hold the interior sash within the casing;

(c) the latching means comprising a member having means for engaging the exterior sash to the interior sash and means for engaging the interior sash to the casing; and

(d) means for moving the exterior sash, the said means for moving being mounted between the exterior sash and the interior sash when the interior sash is locked to the casing, and sealing means positioned between the casing and the exterior sash when the interior sash is locked to the casing, wherein when the latching means releases the locking of the exterior sash to the interior sash, the interior sash forces the moving means to move the exterior sash into sealing relationship with the casing.

4,799,331

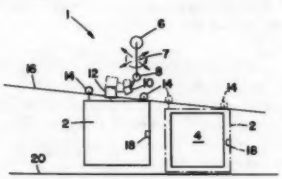
AUTOMATIC, GRAVITY-POWERED CLOSURE DEVICE

Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 681,526, Dec. 14, 1984, abandoned. This application Oct. 28, 1986, Ser. No. 923,946

Int. Cl.[4] E05F *15/20*

U.S. Cl. 49—31 **1 Claim**



1. A gravity actuated automatic closure device, comprising:

a closure for sealing an opening, said closure being roll mounted above said opening;

means for holding said closure in a ready position; and

means for disengaging said holding means said means for disengaging further comprising:

(a) a pivotally mounted moment arm connected at its first end to said means for holding;

(b) a release weight at a second end of said moment arm; and

(c) a plurality of compression springs radially attached to said moment arm below a pivot point on said moment arm.

4,799,332

SLIDING WINDOW

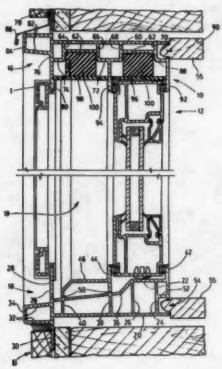
Fred Haas, 12 Tollesbury Place, Unionville, Ontario, Canada

Filed Nov. 20, 1987, Ser. No. 123,364

Claims priority, application Canada, Jul. 23, 1987, 542833

Int. Cl.[4] E06B 7/14

U.S. Cl. 49—408 6 Claims



1. A sliding window construction of extruded thermoplastic material, comprising;

a support frame with side members and top and bottom members;

inner and outer walls on said bottom and side members;

intermediate walls connecting said inner and outer walls of said side and bottom members forming closed tubes in section;

pairs of parallel guide walls on said inner walls of said side and bottom members;

a sloping drainage wall extending from said inner walls of said side and bottom members;

a frame support wall formed on said sloping drainage wall, co-planar with said inner wall of said bottom and side members and having drain opening means in said frame support wall of said bottom member;

said top frame member having a top frame outer wall, and top frame inner walls lying in a common plane and spaced from said top frame outer wall, junction walls extending between said top frame inner and outer walls defining parallel tubular spaces, inward extensions of said junction walls defining spaced parallel channels, top frame guide walls connected to said top frame inner and outer walls, forming two parallel channels;

glazing frames for receiving glazing, said glazing frames having glazing frame inner and outer walls, and side walls joining the same and forming a tube in section, and said outer walls defining a rectangular perimeter of a respective said glazing frame adapted to be received in said guide walls on said support frame, and there being on said glazing frame inner walls, inwardly extending ledge members, and said glazing frame inner walls and said ledge members defining generally L-shaped glazing spaces, and, engagement means adjacent said glazing spaces for reception of a glazing retaining strip.

4,799,333

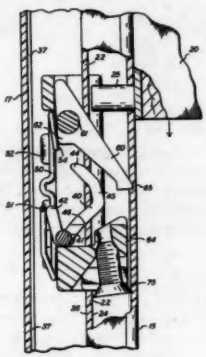
LOCK SHOE SYSTEM FOR TAKE-OUT WINDOW

Norman R. Westfall; James A. Martini, and John I. Habbersett, all of Rochester, N.Y., assignors to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Sep. 22, 1987, Ser. No. 99,894

Int. Cl.[4] E05D 15/22

U.S. Cl. 49—446 38 Claims



1. A lock shoe system for a take-out window having a take-out jamb liner formed of resin material having a slot opening into a vertically extending lock shoe channel within which a lock shoe moves vertically of said jamb liner, said system comprising:

a. a pair of fins extending laterally outward from opposite sides of said slot within said lock shoe channel;

b. said lock shoe being arranged to bear against and ride on a sash side of said fins;

c. said lock shoe having a pivotally mounted biter knife biased to pivot into biting engagement with a frame side of said fins to lock said lock shoe vertically in place; and

d. an arm of said biter knife being engaged by a pin extending from said sash into said slot for holding said knife clear of said fins whenever a free end of said sash pin engages said arm.

4,799,334

STABILIZER FOR AUTOMOBILE DOOR WINDOW GLASS

Youji Sato, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Dec. 10, 1987, Ser. No. 130,925

Claims priority, application Japan, Dec. 13, 1986, 61-192007[U]

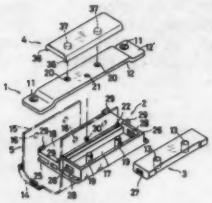
Int. Cl.[4] E06B 7/16

U.S. Cl. 49—493 1 Claim

1. A stabilizer for an automobile door window glass comprising a plate-like bracket having opposite end mounting portions, a spacer having a predetermined thickness and fitted on said bracket, a stopper having through pin holes, a stabilizer body having a recessed portion in which said stopper is fitted, and a mounting surface on which said bracket is fitted, said stabilizer body having pins projecting from the bottom of said recessed portion and inserted through said pin holes of said stopper, and a cloth member with fur having opposite end portions formed with holes for receiving said pins,

said spacer being fitted on said bracket fitted on said stabilizer body, said cloth member with fur with the engage-

ment holes in one of the end portions engaged on the pins projecting from the bottom of said recessed portion being wound on said stabilizer body by covering said spacer, the other end portion of said cloth member with fur being overlapped over said cloth member with fur on the bottom of said recessed portion with said engagement holes fitted on said pins, said stopper being fitted in said recessed portion with the pins projecting from the bottom of said recessed portion being engaged in said pin holes of said stopper, the overlapped end portions of said cloth member with fur being supported by said fitted stopper.



4,799,335

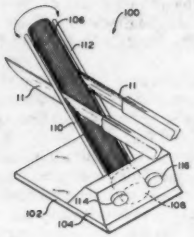
KNIFE SHARPENING DEVICE

Silvio R. Battocchi, 26 Pelham Rd., West Hartford, Conn. 06107

Filed May 20, 1987, Ser. No. 51,711

Int. Cl.[4] B24B *9/04*; B24D *15/08*

U.S. Cl. 51—102 **1 Claim**



1. A knife sharpening device comprising:

base means for forming a base supportable on a support surface;

sharpening means comprising a rotatable, generally longitudinally extending cylindrical sharpening surface having a central rotational axis extending from said base means at a generally oblique angle on the order of approximately 45 degrees relative to said support surface;

means for rotating said sharpening surface; and

two generally parallel guide members connected to said base means in fixed relationship therewith and extending in generally parallel relationship to said rotational axis and lying on opposite sides of said sharpening surface in a common plane extending at said generally oblique angle to said support surface, each said guide member comprising a metal rod equidistantly spaced at a unique pre-established distance from said sharpening surface so that a knife blade inserted between a said guide member and the sharpening surface and engageable therewith engages the sharpening surface at an oblique angle relative to said axis to sharpen the blade at a pre-selected substantially constant sharpening angle as said sharpening surface is rotated and said blade is moved generally transversely across the sharpening surface and the said guide member in a direction generally parallel to said support surface.

4,799,336

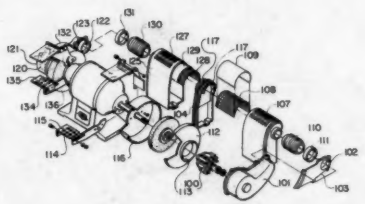
DUST COLLECTING SYSTEM FOR BENCH GRINDER

Tai-Her Yang, 5-1 Taipin St., Si-Ru Town, Dzan-Hwa, Taiwan, R.O.C., Taiwan

Filed Mar. 26, 1987, Ser. No. 30,679

Int. Cl.[4] B24B *31/12*

U.S. Cl. 51—102 **2 Claims**



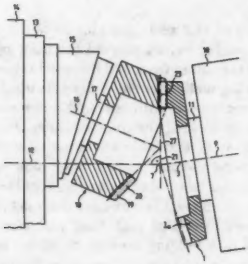
1. In combination with a bench grinder having a main housing including a motor provided with a motor shaft, an abrasive wheel on the shaft, and a guard housing secured to the main housing and surrounding the wheel, a dust collecting system comprising a fan housing secured to the guard housing laterally thereof, the guard housing having a lateral opening formed therein for communicating the guard housing with the fan housing, the motor shaft extending through the lateral opening in the guard housing and into the fan housing, a fan carried by the extending motor shaft in the fan housing, the fan housing having a portion extending rearwardly therefrom and substantially parallel to the guard housing, a filter housing secured to the main housing rearwardly thereof in close proximity to said motor, the bottom of said main housing and said filter housing being coplanar, conduit means connecting the rearwardly-extending portion of the fan housing with the filter housing, the filter housing having a plurality of air exhaust openings formed therein, and a filter supported within the filter housing inwardly of the air exhaust openings therein, whereby the fan draws the dust-laden air axially of the motor shaft and through the lateral opening in the guard housing away from said motor and said abrasive wheel and into the fan housing, and whereby the dust-laden air passes rearwardly into the rearwardly-extending portion of the fan housing and then through the conduit means and substantially parallel to the motor shaft and into the filter housing, and whereby the air thereafter passes through the filter and out of the air exhaust openings in the filter housing; wherein the filter housing has a top semi-cylindrical portion having the air exhaust openings formed therein, and wherein the filter is relatively-thin and substantially semi-cylindrical and is supported within the top semi-cylindrical portion of the filter housing substantially beneath the air exhaust openings formed therein, the axis of said semi-cylindrical filter housing being parallel to the shaft of the motor and abrasive wheel.

4,799,337

METHOD OF GRINDING THE TEETH OF BEVEL GEARS HAVING LONGITUDINALLY CURVED TEETH

Erich Kotthaus, Wallisellen; Ami Ginier, Bergdietikon, and Otto Hildinger, Schwerzenbach, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Dec. 1, 1986, Ser. No. 936,155
Claims priority, application Switzerland, Dec. 13, 1985, 5330/85; Aug. 11, 1986, 3195/86
Int. Cl.[4] B24B *19/00*
U.S. Cl. 51—287 6 Claims



1. A method of fabricating ground gear teeth on a bevel gear, comprising the steps of:

rough machining a bevel gear blank having a first axis of rotation and a first number of longitudinally curved teeth each having a longitudinally convex tooth flank and each having a longitudinally concave tooth flank while leaving a finish machining allowance on each said longitudinally concave tooth flank and on each said longitudinally convex tooth flank;

arranging said rough machined bevel gear blank with said first axis of rotation in a hypoidally displaced relationship to a second axis of rotation of a rotary form tool with said first and second axis defining an angle less than 90° or greater than 90° with respect to one another;

employing as said rotary form tool a rotary form tool having the configuration of a helical bevel gear with a second number of gear teeth hypoidally related to said longitudinally curved teeth of said rough machined bevel gear blank in correspondence with said hypidally displaced relationship of said first axis of rotation to said second axis of rotation and coated with an abrading medium on at least one tooth flank of said second number of gear teeth for removing said finish machining allowance;

meshing said second number of gear teeth of said rotary form tool with said first number of longitudinally curved teeth of said rough machined bevel gear blank;

positively and synchronously driving said rotary form tool about said second axis of rotation and said rough machined bevel gear blank about said first axis of rotation in the ratio of said first number of longitudinally curved teeth to said second number of gear teeth;

selecting said hypoidally displaced relationship of the first axis of rotation to the second axis of rotation and rotary speeds of said first axis of rotation and said second axis of rotation such that a relative sliding velocity arising between said longitudinally curved teeth and said gear teeth has a value within the range of predetermined surface speeds for abrading operations; and

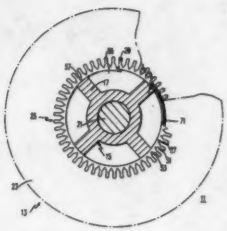
continuously abrading in a single operation at least a selected set of the set of all said longitudinally concave tooth flanks and the set of all said longitudinally convex tooth flanks while performing a predetermined feed motion of said rotary form tool relative to t he bevel gear blank.

4,799,338

BUFFING WHEEL

William M. Schaffner, Pittsburgh, Pa., assignor to Schaffner Manufacturing Company, Inc., Emsworth, Pa.

Filed Oct. 9, 1987, Ser. No. 107,398
Int. Cl.[4] B24B *9/02*
U.S. Cl. 51—334 7 Claims



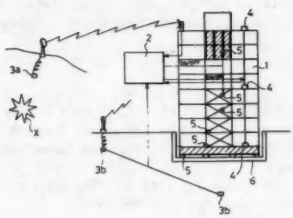
1. A buffing wheel including a ring having a circular body member from at least one of whose peripheral edges teeth extend, an annulus of fabric material for buffing extending from said ring, said annulus being secured to said ring by engagement with said teeth near the inner periphery of said annulus, and a strap mounted on said body member contiguous to said body member extending around substantially the whole periphery of said body member to prevent rupture of said buffing wheel by the centrifugal force developed in said ring in the use of said wheel.

4,799,339

METHOD OF CONTROLLING BUILDING AGAINST EARTHQUAKE

Takuji Kobori; Hiroo Kanayama; Mitsuo Sakamoto; Shunichi Yamada, and Shuichi Kamagata, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,656
Claims priority, application Japan, May 16, 1986, 61-112025; May 16, 1986, 61-112026
Int. Cl.[4] E04B *1/98*
U.S. Cl. 52—1 19 Claims



1. The method of protecting an entire building against seismic tremors caused by an earthquake, comprising the steps of:

(a) sensing a seismic tremor near an earthquake center and remote from said building, before said seismic tremor reaches said building;

(b) sensing said seismic tremor in said building;

(c) analyzing said sensed tremors;

(d) providing selected structural members throughout said building with means to vary their respective rigidities; and

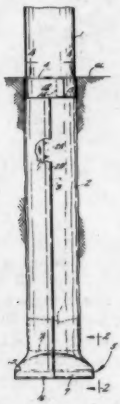
(e) selectively varying the rigidities of said selected structural members responsive to the analysis of said tremors.

4,799,340

BARRIER FOR UTILITY POLE

James W. Lichau; Patricia K. Lichau, both of 16426 Old Stage Coach Rd., Walton, Oreg. 97490, and Steven D. Hanson, Eugene, Oreg., assignors to James W. Lichau and Patricia K. Lichau, both of Walton, Oreg.

Filed Nov. 3, 1986, Ser. No. 926,258
Int. Cl.[4] E04B *1/70*
U.S. Cl. 52—170 1 Claim



1. A barrier for application to an end segment of a pole or piling, said barrier comprising,

synthetic sheet material of a pliable nature having joined lapped vertical margins providing a seam to form the material into an elongate tubular sheath of circular section corresponding generally to the pole diameter,

said seam joined by a thermal weld,

an upper extremity of the sheet material defining an open area for pole reception,

said sheet material terminating downwardly and thereat forming closure means including multiple folds to prevent the passage of material into or out of said barrier, said sheet material defining a chamber subjacent the end of a pole or piling therein and,

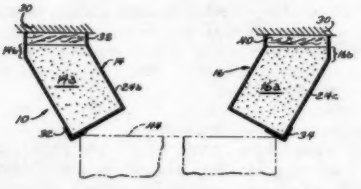
cinch means of synthetic material extending about the upper extremity of the sheet material to urge same into engagement with the pole or piling surface, said cinch means being thermally responsive to shrink in the presence of heat.

4,799,341

WEDGE SEAL FOR LOADING DOCK SHELTER

John A. Frommelt, Dubuque, Iowa, and Kenneth Lenz, East Dubuque, Ill., assignors to Frommelt Industries, Inc., Dubuque, Iowa

Filed Sep. 23, 1987, Ser. No. 100,127
Int. Cl.[4] E04H *14/00*
U.S. Cl. 52—173 DS 11 Claims



1. A loading dock shelter for use with a door opening in a wall and adapted to seal against the rear top and side edges of a truck backed against said loading dock shelter, said loading dock shelter comprising:

a resilient head pad mounted to the wall above the door opening therein and extending substantially the length of the door opening, said head pad having mitered end portions; and

resilient left and right side pads mounted to the wall adjacent respective lateral portions of the door opening therein, each of said side pads having respective mitered upper end portions, wherein each of the mitered end portions of said head pad are positioned in abutting contact with a respective complementary mitered upper end of one of said side pads;

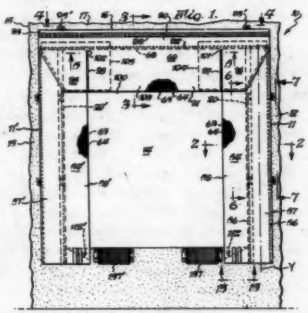
wherein each of said pads includes an inner side extending from the wall inwardly toward the door opening, a first outer side extending from and disposed substantially transversely to the wall, a second outer side displaced from the wall and continuous with said first outer side and extending inwardly toward the door opening, and a distal side continuous with and disposed generally transversely to said inner side and said second outer side and adapted to engage the rear edge of a truck at an acute angle, such that when a truck engages the loading dock shelter the second outer sides of each of said head and side pads expand outwardly in a bulging manner to allow the pads to be displaced outward from the edges of the truck while the distal sides of said pads engage an outer periphery of the rear top and side edges of the truck in a sealed manner.

4,799,342

COMBINED DOCK SEAL AND SHELTER

Joseph P. H. Klevnjans, Corsopolis, Pa., assignor to Eriks Holding N.V., Alkmaar, Netherlands

Continuation of Ser. No. 680,898, Dec. 12, 1984, abandoned.
This application Apr. 14, 1987, Ser. No. 42,633
Int. Cl.[4] E04F *10/04;* E06B *1/66*
U.S. Cl. 52—173 DS 31 Claims



1. A combined dock seal and shelter for mounting on opposite sides of a doorway in a building wall comprising a pair of spaced side members including substantially parallel vertical elongated side pad members having longitudinal axes and compressible flexible resilient cores, first sides on said side pad members for placement in contiguous relationship to said building wall, second sides on said side pad members on the opposite sides of said side pad members from said first sides for placement in spaced relationship to said building wall, third sides on said side pad members facing each other and extending transversely to said first and second sides, securing means for securing said side pad members to said building wall, said cores having a first resistance to compression from a normal unstressed condition, elongated flexible resilient substantially planar sheet-like side flap members having a width which

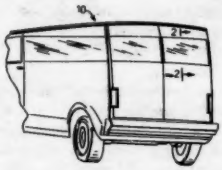
includes first and second portions which are continuations of each other, means securing said first portions on said second sides of said side pad members with said second portions extending beyond said second sides toward each other for providing spaces between said second portions and said building wall, said third sides intersecting said side flap members at the junctions of said first and second portions, said side flap members having a second resistance to deflection from a normal unstressed condition in a direction about said longitudinal axes throughout sufficient portions of said first and second portions which is greater than said first resistance to compression so that when forces are applied to said second portions of said side flap members along paths which are substantially parallel to said longitudinal axes said first and second portions of said side flap members will compress said elongated pad members primarily at the junctions of said second and third sides because said elongated side pad members have said first resistance to compression which is less than said resistance to deflection of said side flap members throughout said sufficient portions of said first and second portions.

4,799,343

WINDOW ASSEMBLY

Peter N. Gold, 465 North Wood Rd., Rockville Centre, N.Y. 11576

Filed Aug. 6, 1987, Ser. No. 82,048
Int. Cl.[4] E06B *3/00*
U.S. Cl. 52—208 **9 Claims**



1. A sliding automotive window comprising:

a window frame having generally parallel upper and lower longitudinally extending portions, each having a generally Z-shaped flange having an inner leg and an outer leg connected by a cross leg, said inner and cross leg of said Z-shaped flange forming an inwardly facing generally V-shaped pocket having a first predetermined cross section;

a window pane having generally parallel upper and lower generally V-shaped edges having a second predetermined cross section defined by inner and outer legs of said V-shaped edge of said window pane, said second predetermined cross section being smaller than said first predetermined cross section, said window pane thereby being adapted to fit within said inwardly facing generally V-shaped pocket of each of said upper and lower portion of said Z-shaped flanges; and

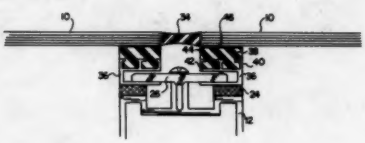
a track member made of material having a predetermined thickness fixedly attached to said inner and outer legs of said edges of said window pane and disposed between said upper and lower generally V-shaped edges of said window pane and the generally V-shaped pocket of said Z-shaped flange, said first predetermined cross section being greater than the sum of said second predetermined cross section and said predetermined thickness of said track member mounted on said inner and outer legs of said edge of said window pane to provide a clearance between said track member and said inwardly facing V-shaped pocket sufficient to permit said window pane with said track member thereon to slide in said V-shaped pocket of said window frame.

4,799,344

MECHANICAL-ADHESION GLAZING

Geoffrey V. Francis, Brampton, Canada, assignor to Vision Engineering & Design, Inc., Oakville, Canada

Continuation-in-part of Ser. No. 749,655, Jun. 28, 1985, abandoned. This application Jun. 29, 1987, Ser. No. 68,034
Int. Cl.[4] E04B *2/28*
U.S. Cl. 52—235 **23 Claims**



1. A glass unit comprising:

a glass light having an inner surface;

an elastomeric, elongate gasket extending along edges of said glass light and located adjacent said inner surface;

a thin adhesive layer bonding said glass light to said gasket and located between said glass light and said gasket; and

an elongate supporting frame of rigid material extending along the same edges of said glass light and located on the side of said gasket opposite said glass light, said frame including integral flanges which extend into and are essentially non-removably, structurally united with the body of said elastomeric gasket for mechanically fastening said gasket to said frame;

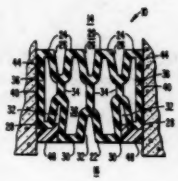
said gasket being of sufficient flexibility to accommodate relative movement between said glass light and said frame, thereby reducing stresses to said adhesive layer.

4,799,345

REVERSIBLE COMPRESSION SEAL

Michael C. Rizza, 2863 Encina Camino, Walnut Creek, Calif. 94598

Filed Oct. 19, 1987, Ser. No. 109,966
Int. Cl.[4] E04C *11/10*
U.S. Cl. 52—396 **12 Claims**



1. A reversible seal for sealing abutting building surfaces, comprising:

a first surface;

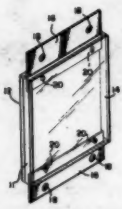
a second surface having a plurality of face sections between lateral edges of said second surface such that said face sections define two parallel planes, each said face section separated by an indenting contour disposed in said second surface, a first of said planes closest to said first surface defined by said face sections lying between one of said lateral edges of said second surface and said indenting contour located nearest said same lateral edge, a second of said planes farthest from said first surface defined by said face sections in said second surface other than those said face sections defining said first plane, said first and second planes defining a region for accepting sealant material; and

a plurality of side faces joining said first and second surfaces so as to form a longitudinal hollow seal body.

4,799,346
LAMINATED GLAZING UNIT

Nelson P. Bolton, Quakertown, and W. Novis Smith, Jr., Philadelphia, both of Pa., assignors to Advanced Glass Systems Corp., Trumbauersville, Pa.

Filed Jul. 16, 1988, Ser. No. 886,301
Int. Cl.[4] E04C *1/40*
U.S. Cl. 52—509 18 Claims



1. A transparent laminate adapted for mounting to a support structure by attachment outside its periphery and transferring impact energy to said support structure, said laminate comprising:

at least two sheets of rigid transparent substrate layers;

at least one transparent resinous interlayer bonding together said substrate layers, said substrate layers and said interlayer having outside edges defining said laminate periphery, and

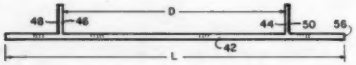
at least one attachment member mounting said laminate on a support structure embedded in said interlayer free of contact with said substrate layers and extending from the periphery of said laminate, said attachment member having means separate from said substrate layers and interlayer securing said laminate to a support in a manner to resist removal, securement means securing said laminate to said support structure and transferring impact energy to the support structure, and

resistance means on said attachment means within said interlayer aiding in the prevention of removal of said attachment member from the laminate and in preventing delamination.

4,799,347
INSULATION SUPPORT TRUSS

Eli A. Byler, 63968 Co. Home Rd., Lore City, Ohio 43755

Filed Dec. 24, 1987, Ser. No. 137,576
Int. Cl.[4] E04B *3/24*
U.S. Cl. 52—712 8 Claims



1. A new and improved insulation support truss for insertion between floor joists with either of two different standard floor joist spacings, comprising:

thin elongated strip means formed from a flexible material;

said strip means having a length slightly greater than the larger of the two different standard floor joist spacings;

pointed tip means at opposite ends of said strip for engagement with side walls of the floor joists;

a pair of spaced legs transversely connected to said strip means;

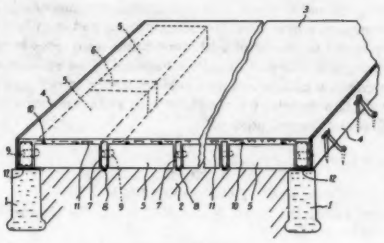
said legs spaced apart a distance slightly greater than the smaller of the two different standard floor joist spacings; and

said legs each having a roughened outer surface.

4,799,348
METHOD AND EQUIPMENT FOR MAKING A RIGID SLAB ENABLING TO CARRY A BUILDING

Max Brami, 60 rue Saint-HonoréF-75001 Paris, and Pierre Mazarguil, 44 rue du Four, F-75006 Paris, both of France

PCT No. PCT/FR85/00159, § 371 Date Feb. 19, 1986, § 102(e) Date Feb. 19, 1986, PCT Pub. No. WO86/00358, PCT Pub. Date Jan. 16, 1986
PCT Filed Jun. 18, 1985, Ser. No. 847,408
Claims priority, application France, Jun. 19, 1984, 84 09595
Int. Cl.[4] E04B *1/00*; E04G *21/00*; E02D *27/02*
U.S. Cl. 52—742 8 Claims



1. Process for constructing a ribbed and rigid floor slab for supporting a construction, which comprises the following steps:

(a) forming pin-point foundations at least at the periphery of the floor slab to be formed;

(b) preparing flat and levelled ground at the level of the pin-point foundations;

(c) disposing recoverable shuttering elements on the ground thus prepared, at the periphery of the floor slab to be formed;

(d) disposing on the ground surface, within said recoverable peripheral shuttering elements, parallel rows of non-recoverable shuttering elements which engage the ground by their whole lower face, said rows of non-recoverable shuttering elements being intended to form the ribs of the floor slab to be formed;

(e) disposing between the rows of non-recoverable shuttering elements U-shaped spacing elements made of a sealing material and of which the lower face engages the ground;

(f) disposing a metal trellis work on the upper face of the non-recoverable shuttering elements for reinforcing the floor slab to be formed; and

(g) pouring concrete over the assembly thus formed.

4,799,349
FIRE RESISTANT STEEL DOOR

John S. Luckanuck, Burlington, Canada, assignor to Radix-x/World Ltd., Ontario, Canada

Filed Feb. 9, 1987, Ser. No. 12,628
Claims priority, application Canada, Apr. 4, 1986, 505877
Int. Cl.[4] E04C *2/34*
U.S. Cl. 52—809 9 Claims

1. A steel door having steel sheets forming the outside surfaces of the door including a fire retardant core bonded to the inside surfaces of said steel sheets, said core being a stiff, high density bonded mineral fiber sheet having a phenolic resin content of about 4 to about 10% by weight bonded to the inside surfaces of the steel sheets by a binder comprising a liquid alkali metal silicate admixed with a mineral powder in an amount sufficient that on said binder being subjected to high

temperatures it intumesces to form a non-porous ceramic layer between the inside surfaces of the steel sheets and the mineral

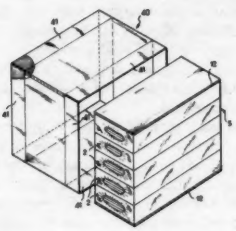
fiber sheet thereby protecting said mineral fiber sheet from said high temperature.

4,799,350

PROCESS FOR PACKAGING PANELS OF A COMPRESSIBLE MATERIAL AND THE PACKAGES PRODUCED BY THIS PROCESS

Jean-Claude Rias, Villennes sur Seine, France, assignor to Isover Saint-Gobain, France

Filed Jul. 30, 1982, Ser. No. 403,598
Claims priority, application France, Jul. 31, 1981, 81 14970
Int. Cl.[4] B65B *53/02, 63/02*
U.S. Cl. 53—399 **7 Claims**



1. Process for packaging compressible panels characterized by the following successive operations:

superposing a plurality of panels to form a pile;

applying an enclosure of shrinkable plastic material to the pile;

subjecting the enclosed pile to a first compression, perpendicularly to the side faces of the panels;

effecting shrinkage of the enclosure on the compressed pile to obtain a package of compressed panels;

stacking a plurality of identical packages of compressed panels in a pile;

applying a flat rigid element against each of the end faces of the pile to form a pile assembly of said elements and stacked packages;

subjecting the pile assembly to a second compression by applying a compression force to the outer sides of and perpendicularly to the planes of said flat rigid elements; and

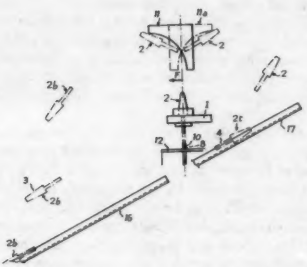
applying package fastening means to the pile assembly of compressed packages and flat rigid elements thereby providing an integrated package assembly incorporating the flat rigid elements at the end faces of the stacked packages.

4,799,351

PROCESS AND APPARATUS FOR TURNING HEAD TO FOOT AND PACKING DISSYMMETRICAL OBLONG BODIES

Guy Blanda, Guitres, France, assignor to Sanofi, Paris, France

Filed Sep. 3, 1987, Ser. No. 92,572
Claims priority, application France, Sep. 3, 1986, 86 12391
Int. Cl.[4] B65B *35/56, 35/54*
U.S. Cl. 53—446 **17 Claims**



1. A process for arranging a plurality of dissymmetrical oblong bodies, each body having a head and a foot, so that adjacent bodies are disposed in a head-to-foot relationship, comprising:

placing a plurality of bodies side by side on a table, all of said bodies being oriented in a single direction;

consecutively projecting pairs of said bodies from the table vertically and deflecting said pairs of bodies onto first and second guide members so that one of each of said pairs of bodies is oriented in a first direction on the first guide member, while the other of each of said pairs of bodies is oriented in a second and opposite direction on the second guide member;

guiding a first set of bodies from the first guide member and a second set of bodies from the second guide member side by side to a packing station; and

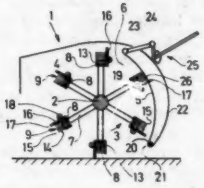
packing the bodies so that the bodies from the first set of bodies alternate with the bodies from the second set of bodies, with the bodies of the first set of bodies being oriented opposite to the bodies of the second set of bodies.

4,799,352

APPARATUS FOR CONDITIONING CUT HALMS

Jean-Pierre Amstutz, Birr, Switzerland, assignor to Bucher-Guyer AG, Niederwenigen-Zurich, Switzerland

Continuation of Ser. No. 585,619, Mar. 6, 1984, abandoned, which is a continuation of Ser. No. 329,695, Dec. 11, 1981, abandoned. This application Aug. 13, 1984, Ser. No. 640,533
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048569
Int. Cl.[4] A01D *43/02, 88/00*
U.S. Cl. 56—364 **1 Claim**



1. An agricultural machine movable over the ground for

conditioning cut agricultural crop material, said machine comprising:

(a) a rotor adapted for rotation about an axis parallel to the ground, said rotor having a periphery;

(b) a plurality of brushes extending along the periphery of said rotor in a direction parallel to said axis, ech of said brushes having a leading edge and a trailing edge relative to the direction of rotation of said rotor, each of said brushes comprising a plurality of bristles, each of said bristles having a free end which extends radially outward from the periphery of said rotor;

(c) a plurality of conveying prongs secured to the periphery of said rotor, each of said prongs having a free end which extends radially outward from the periphery of said rotor beyond the free ends of said bristles, at least one of said conveying prongs being located near the trailing end of each of said brushes, and

(d) channel-forming means located adjacent said rotor for forming a guide channel for said cut crop material, said channel-forming means including a curved surface approximately defined by the trajectory of said free ends of said bristles when said rotor is rotating, said channel-forming means including at least one slit therein for receiving the free ends of said prongs so that said channel-forming means does not impair the rotary motion of said rotor,

said prongs being adapted to convey said crop material into said channel-forming means, said brushes being adapted to condition said crop material in said channel-forming means.

4,799,353

METHOD FOR PIECING ROVINGS AND EXCHANGE ROVING BOBBINS IN A RING SPINNING FRAME AND WORKING MACHINE FOR CARRYING OUT THIS METHOD

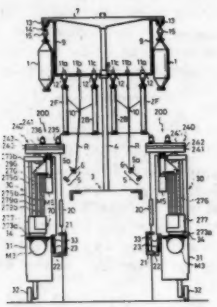
Yoshio Kawasaki; Tatutake Horibe, both of Fujieda; Kenji Sasaki, Komaki, and Kazuo Yamada, Inazawa, all of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Filed Aug. 25, 1987, Ser. No. 89,604

Claims priority, application Japan, Aug. 25, 1986, 61-197316

Int. Cl.[4] D01H *9/18, 9/10, 15/00*

U.S. Cl. 57—281 **11 Claims**



1. A method for piecing rovings introduced from almost exhausted roving bobbins suspended by two rows of bobbin hangers mounted on a creel of a conventional ring spinning frame with rovings introduced from full packaged roving bobbins suspended by bobbin hangers of a supply rail arranged in front of said creel, and for exchanging said almost exhausted roving bobbins for said full packaged roving bobbins, comprising the following operations:

piecing rovings whereby when roving bobbins of said creel become almost exhausted, each end of rovings of two adjacent full packaged roving bobbins of said supply rail are simultaneously caught, said caught roving ends being pieced with a corresponding one of rovings introduced from two adjacent almost exhausted roving bobbins suspended by said front row bobbin hanger and said back row bobbin hanger, from which rovings are supplied to two adjacent draft parts, and separating rovings from said almost exhausted roving bobbins supplied to said draft parts, and

exchanging roving bobbins whereby after transferring said almost exhausted roving bobbins, suspended by said front bobbin hanger and said back bobbin hanger and having completed said roving piecing operation, to corresponding bobbin hangers of said supply rail simultaneously, said full packaged roving bobbins, having completed said roving piecing operation and supplying rovings to corresponding draft parts, are simultaneously transferred to corresponding bobbin hangers of the front row and back row from which said almost exhausted roving bobbins were taken off,

wherein said roving bobbin exchanging operation and said roving piecing operation are performed in parallel and at the same time, and said roving bobbin exchanging operation and said roving piecing operation are performed from one side to another side of said ring spinning frame, along a longitudinal direction thereof.

6. An apparatus for piecing rovings introduced from almost exhausted roving bobbins suspended by two rows of bobbin hangers mounted on a creel of a conventional ring spinning frame with rovings introduced from full packaged roving bobbins suspended by bobbin hangers of a supply rail arranged in front of said creel, and for exchanging said almost exhausted roving bobbins for said full packaged roving bobbins, comprising:

first means for piecing rovings introduced from two of said almost exhausted roving bobbins suspended by a front bobbin hanger and a back bobbin hanger, facing each other, with rovings introduced from two adjacent full packaged roving bobbins of said supply rail respectively,

second means for exchanging said two almost exhausted roving bobbins and said two full packaged roving bobbins, having completed said roving piecing:

means for displacing said first and second means from one side to the other side along a spindle alignment of said spinning frame and

means for actuating said first and second means,

wherein said first means comprises means for catching ends of rovings from said full packaged roving bobbins suspended by two adjacent bobbin hangers of said supply rail, means for piecing said ends of rovings introduced from full packaged roving bobbins with corresponding rovings introduced from almost exhausted roving bobbins supplying roving s to two adjacent draft parts, and means for separating said rovings introduced from said almost exhausted roving bobbins from being supplied to corresponding draft parts after piecing said ends of rovings introduced from said full packaged roving bobbins with said rovings introduced from said almost exhausted roving bobbins.

4,799,354

TURBOPROPELLER OR TURBOFAN GAS TURBINE ENGINE

Ronald A. Midgley, Derby, England, assignor to ROLLS-ROYCE plc, London, England

Filed Dec. 15, 1987, Ser. No. 133,484

Claims priority, application United Kingdom, Jan. 15, 1987, 8700806

Int. Cl.[4] F02C *7/268*

U.S. Cl. 60—39.142 **11 Claims**

1. A gas turbine engine comprising a core engine having in flow series a compressor means, combustor means and turbine means, the turbine means and compressor means being coaxial and the turbine means being arranged to drive the compressor means,

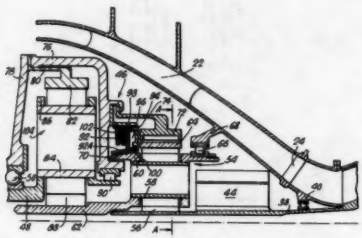
a rotor having a plurality of blades, the rotor being arranged coaxial with the turbine means,

shaft means and gear means, the turbine means being arranged to drive the compressor means via the shaft means, the turbine means being arranged to drive the rotor via the shaft means and the gear means,

the gear means comprising a first reduction gear assembly and a second reduction gear assembly,

the first reduction gear assembly comprising a first sun gear, a plurality of first planet gears, a first carrier means and a first annulus gear, the first sun gear being provided on and being driven by the shaft means, the plurality of first planet gears meshing with the first sun gear, the first annulus gear surrounding and meshing with the first planet gears, the first planet gears being rotatably mounted on the first carrier means,

the second reduction gear assembly comprising a second sun gear, a plurality of second planet gears, a second carrier



means and a second annulus gear, the second sun gear being provided on and being driven by the first carrier means, the plurality of second planet gears meshing with the second sun gear, the second annulus gear surrounding and meshing with the second planet gears, the second planet gears being rotatably mounted on the second carrier means, the second carrier means being drivingly connected to the rotor,

a starter means being arranged to drive the shaft means in order to start the core engine,

a clutch means being arranged to disengageably connect the first and second annulus gears, the clutch means being arranged to allow the turbine means to drive the rotor via the gear means when the core engine is running at or above a predetermined speed, and to prevent the turbine means driving the rotor via the gear means when the core engine is running below the predetermined speed or is at rest to allow easy starting of the core engine by the starter means.

4,799,355

BRAKE ACTUATION SYSTEMS FOR VEHICLES

Anthony W. Harrison, Selly Oak, England, assignor to Lucas Industries public limited company, Birmingham, England

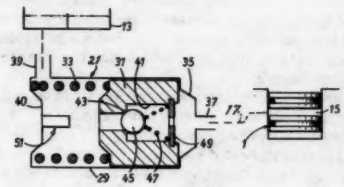
Filed Aug. 8, 1986, Ser. No. 894,858

Claims priority, application United Kingdom, Aug. 13, 1985, 8520280

Int. Cl.[4] B60T *11/20*

U.S. Cl. 60—562 **9 Claims**

1. An actuation system for a brake comprising two pistons which are axially slidable in a common volume, the space between one end of the volume and one piston being connected to a primary power system to exert a force on said one piston, and the space between said pistons being connected to a secondary power system to exert a force on said second piston, said second piston acting to control the brake, said primary power system comprising a power system pump connected between a reservoir of pressure fluid and said space between said one of the volume and said one piston to draw pressure fluid from said reservoir and pump same into said space and when said power system is activated, a controller for monitoring the operation of said power pump to provide an indication to an operator when the primary power system is operational, and a flow detector located in the primary system and being monitored by said controller to provide an indication to an operator when fluid is flowing in said primary power system, said flow detector comprising an axially displaceable detector piston located within a cylindrical cavity said detec-



tor piston being responsive to fluid pressure from said power pump and having a bore extending axially therethrough, the bore being formed with a shoulder which forms a valve seat for a spring biassed valve closure member, an elongate projection located at one end of the cylindrical cavity extending axially thereof and being arranged to pass through the said bore to lift the valve closure member as said detector piston is moved axially under the action of pressure fluid against a spring, and detection means monitoring the movement of said detector piston.

4,799,356

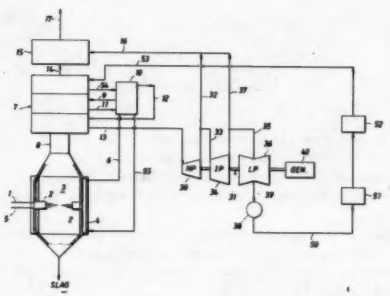
SYNTHESIS GAS GENERATION COMPLEX AND PROCESS

Egon L. Doering, Pasadena, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 28, 1986, Ser. No. 890,035

Int. Cl.[4] F01K *17/00*

U.S. Cl. 60—648 **6 Claims**



1. A synthesis gas generation complex comprising

(a) a coal gasification plant, including at least one gasifier for the gasification of coal to produce synthesis gas at a temperature of about 2000° F. to 3000° F., the gasifier having heat exchange surfaces adapted for indirect heat exchange with steam and water;

(b) a heat exchange section comprising at least one heat exchanger in gas flow communication with said gasifier, said heat exchanger comprising at least one segment adapted to generate superheated steam, and lower temperature heat exchange segments;

(c) a gas cleanup section in flor communication with said

heat exchanger, said cleanup section comprising means for removing particulates and H_2S from said synthesis gas;

(d) a steam turbine adapted to receive and utilize superheated steam and produce a low temperature vapor, said steam turbine driving an electrical generator;

(e) means for providing superheated steam from said heat exchanger to said steam turbine;

(f) means for condensing low temperature vapor froms aid steam turbine to produce condensate, in flow communication with said steam turbine; and

(g) means for supplying condensate, from said means for condensing low temperature vapor, to a lower temperature heat exchange segment of at least one heat exchanger in said heat exchange section for indirect heat exchange of said condensate;

(h) means for recovering heated condensate from said lower temperature heat exchange section; and

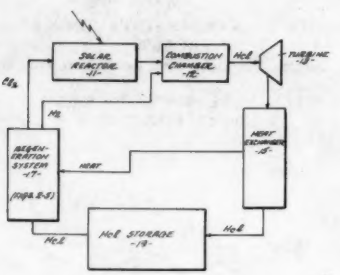
(i) means for supplying heated condensate from said means for recovering heated condensate to the heat exchange surfaces of a gasifer in said gasification zone for indirect heat exchange generation of steam.

4,799,357

CLOSED LOOP REGENERATION SYSTEM FOR GENERATING MECHANICAL ENERGY AND THE METHOD THEREFOR

Robert J. Hanrahan, and Avinash K. Gupta, both of Gainsville, Fla., assignors to Solar Reactor Technologies, Inc., Miami, Fla.

Filed Apr. 16, 1986, Ser. No. 852,454
Int. Cl.[4] F01K *21/06*
U.S. Cl. 60—673 **12 Claims**



1. A closed loop regeneration system for generating mechanical and thermal energy comprising:

means for combining molecular chlorine and hydrogen to form hydrogen chloride at high temperatures and pressure;

means receiving said hydrogen chloride from said combining means for generating mechanical power;

means for extracting thermal energy from said hydrogen chloride;

means for converting said hydrogen chloride to molecular hydrogen and chlorine; said converting means comprising a first reactor containing copper and cuprous chloride;

means for passing said hydrogen chloride over said copper and cuprous chloride at a temperature of at least about 100° C. to thereby generate cuprous chloride, cupric chloride and molecular hydrogen;

a second reactor containing cuprous chloride and cupric chloride;

means for conveying said thermal energy from said extracting means to said second reactor to thereby generate copper, cuprous chloride and molecular chlorine; and

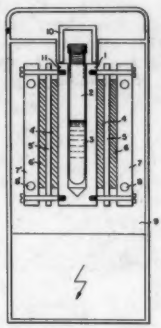
means for conveying said generated molecular chlorine and hydrogen to said combining means.

4,799,358

APPARATUS FOR COOLING AND DEEP FREEZING SAMPLES OF BIOLOGICAL MATERIAL ENCLOSED IN VESSELS

Ulrich C. Knopf, Freiburg, and Joseph Sieber, Zurich, both of Switzerland, assignors to Agrogen Stiftung, Freiburg, Switzerland

Filed Jan. 13, 1988, Ser. No. 143,646
Claims priority, application Switzerland, Jan. 19, 1987, 00164/87
Int. Cl.[4] F25B *21/02*
U.S. Cl. 62—3 **20 Claims**



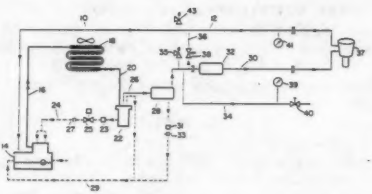
1. Apparatus for cooling and deep freezing samples of biological material enclosed in vessels, consisting of two parallel plate-like cooling elements which between them confine a cooling zone, characterized in that each of said cooling elements is a layered structure of at least two cooling layers stacked onto one another alternatingly with metal plates of high thermal conductivity, each of said cooling layers consisting of one or more blocks of Peltier elements arranged thermally in parallel, whereby the metal plates, which constitute the outer boundaries of the arrangement, are equipped with means for external cooling.

4,799,359

CRYOGENIC REFRIGERATOR COMPRESSOR WITH EXTERNALLY ADJUSTABLE BY-PASS/RELIEF VALVE

Harry G. Nicoll, Norwell, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Continuation of Ser. No. 126,343, Nov. 30, 1987, abandoned, which is a division of Ser. No. 834,201, Feb. 27, 1986, Pat. No. 4,718,442. This application May 13, 1988, Ser. No. 195,366
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—6 **10 Claims**



1. An improved cyrogenic refrigerator and compressor system in which helium is carried through a helium return line from a cryogenic refrigerator to a compressor pump where the helium is mixed with oil and compressed, and the helium is pumped to and through a heat exchanger, from said heat exchanger the helium and oil mixture is pumped to an oil separa-

tor, from which the oil is pumped back to the compressor and the helium is pumped back to the cryogenic refrigerator via a helium supply line, a helium connecting line is located between said helium supply and return lines, said connecting line has an in-line differential pressure relief valve which opens to allow helium to travel from the helium supply line into the helium return line if the pressure within the helium supply line exceeds a pre-determined value, wherein the improvement comprises:

an in-line differential pressure relief valve which is externally adjustable while connected to the helium connecting line.

4,799,360

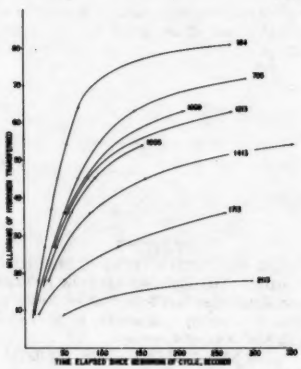
METHOD OF BINDING A METAL HYDRIDE TO A SURFACE

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19382, and Paul K. Predecki, Denver, Colo., assignors to William B. Retallick, West Chester, Pa.

Division of Ser. No. 873,371, Jun. 12, 1986, abandoned. This application Oct. 26, 1987, Ser. No. 115,647

Int. Cl.[4] F28D *7/00*; F17C *11/00*

U.S. Cl. 62—48 **12 Claims**



1. A system for storing hydrogen in the form of a metal hydride, comprising a hydride-forming metal which is bound to a surface with a silicone rubber, the system defining a flow path for hydrogen, the hydrogen being directed along said flow path to and from the hydride-forming metal, the system including a water sorbent disposed to contact the hydrogen before the hydrogen contacts the silicone rubber, the water sorbent being disposed within said flow path:

4,799,361

METHOD FOR CRYOPREPARING BIOLOGICAL TISSUE FOR ULTRASTRUCTURAL ANALYSIS

John G. Linner, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 770,772, Aug. 29, 1985, Pat. No. 4,636,070, which is a continuation-in-part of Ser. No. 525,626, Aug. 23, 1983, Pat. No. 4,510,169. This application Nov. 4, 1986, Ser. No. 926,985

Int. Cl.[4] F24F *3/16*; F25D *17/02*

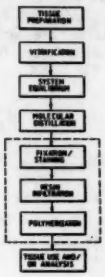
U.S. Cl. 62—64 **14 Claims**

1. A method for cryopreparing a biological tissue sample for ultrastructural analysis comprising:

(a) vitrifying a biological tissue sample;

(b) depressurizing the atmosphere surrounding said sample;

(c) bringing said vitrified tissue sample to equilibrium at a temperature of less than −140° C.; and



(d) dehydrating said vitrified tissue sample while said sample is maintained in a state of equilibrium.

4,799,362

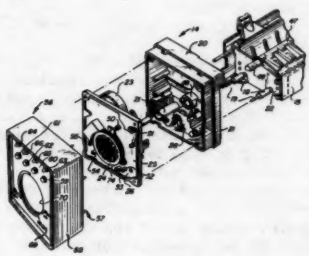
MODULAR HOME ICE MAKER TEST APPARATUS

Paul B. Chestnut, Daviess County, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 21, 1987, Ser. No. 136,025

Int. Cl.[4] F25B *49/00*

U.S. Cl. 62—127 **19 Claims**



1. In an ice maker apparatus including a control mechanism having a control circuit for effecting automatic cyclical operation of the ice maker apparatus, said ice maker apparatus further including a plurality of electrical components, test means for testing the condition of the electrical components comprising:

a test circuit having electrical connectors arranged to have electrical connection to said electrical components as an incident of the test circuit being removably associated with the control mechanism while maintaining the arrangement of the control circuit to permit operation of the apparatus by the control mechanism;

switches in the test circuit for selective operation by a user; and

indicator means in the test circuit for indicating a condition of said electrical components, said indicator means being connected to said electrical connectors in said test circuit for selective indication of the operability of said electrical components when said electrical connectors are electrically connected thereto and said switches being operable to selectively energize said electrical components in the event a malfunction thereof is indicated by said indicator means.

4,799,363

ROOM AIR CONDITIONER

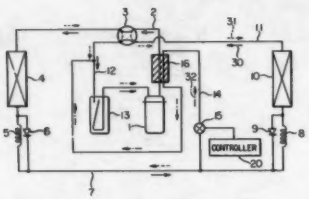
Takashi Nakamura, Wakayama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 71,077, Jul. 8, 1987, abandoned. This application Mar. 8, 1988, Ser. No. 168,534

Claims priority, application Japan, Jul. 17, 1986, 61-168405

Int. Cl.[4] F25B *13/00*

U.S. Cl. 62—160 **10 Claims**



1. A room air conditioner comprising:

a compressor having a suction side and a discharge side;

an accumulator having an intake side and a discharge side which is connected to the suction side of said compressor;

an outdoor heat exchanger having a gas side and a liquid side;

an indoor heat exchanger having a gas side and a liquid side;

liquid-side piping connected between the liquid side of said outdoor heat exchanger and the liquid side of said indoor heat exchanger;

discharge piping having one end connected to the discharge side of said compressor;

return piping having one end connected to the intake side of said accumulator;

a change-over valve connected to the other end of said return piping, to the other end of said discharge piping, to the gas side of said outdoor heat exchanger, and to the gas side of said indoor heat exchanger, said change-over valve being adapted to be switched between a cooling and defrosting setting in which the discharge side of said compressor communicates with said outdoor heat exchanger and the intake side of said accumulator communicates with said indoor heat exchanger, and a heating setting in which the discharge side of said compressor communicates with said indoor heat exchanger and the intake side of said accumulator communicates with said outdoor heat exchanger;

a by-pass for connecting said liquid-side piping with the intake side of said accumulator;

valve means disposed in said by-pass;

a heat exchanger disposed in said bypass and said discharge piping so as to be able to perform heat exchange therebetween; and

controller comprising first means for opening said valve means during defrosting operation and closing it at other times.

4,799,364

DISCOID COLD CARTRIDGE INSERTABLE INTO AN ICE-CREAM MAKER

Otto Meier, Keutschach; Kurt Sadek, Rain bei Ebenthal; Zvonko Sikoronja, Klagenfurt, all of Austria, and Johann Schröder, Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

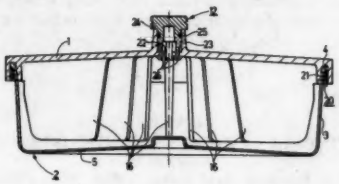
Filed Jun. 23, 1986, Ser. No. 877,563

Claims priority, application Austria, Jun. 26, 1985, 1905/85

Int. Cl.[4] A23G *9/12*

U.S. Cl. 62—342 **16 Claims**

1. A discoid cold cartridge insertable into an ice-cream maker and filled with a latent heat storage medium, comprising: a discoid main wall which cooperates with a scraper and stirrer tool of the ice-cream maker, said cold cartridge formed from at least two parts joined together, of which one part includes the discoid main wall facing the scraper and stirrer tool and the other part a through-shaped base, the discoid main wall which cooperates with the scraper and stirrer tool being made as a stable die-cast part whereby the formation of ice-cream on said main wall is uniformly scraped off, said discoid



main wall also being provided with fins projecting into the cold cartridge for increasing the stability of said main wall and increasing the heat transfer rate between said main wall and heat storage medium whereby the uniform formation of ice-cream on said discoid main wall is promoted and obtained, at least one wall of the base being flexible so as to be adaptable to the change in volume of the latent heat storage medium in phase transition.

4,799,365

DEVICE FOR FLATBED KNITTING MACHINES FOR MONITORING THE KNITWEAR FOR FALLING-OFF

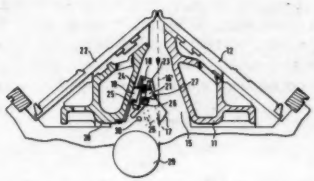
Ernest Goller, Reutlingen, and Fritz Walker, Kusterdingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Mar. 9, 1988, Ser. No. 168,081

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1987, 3707569

Int. Cl.[4] D04B *35/20*

U.S. Cl. 66—166 **7 Claims**



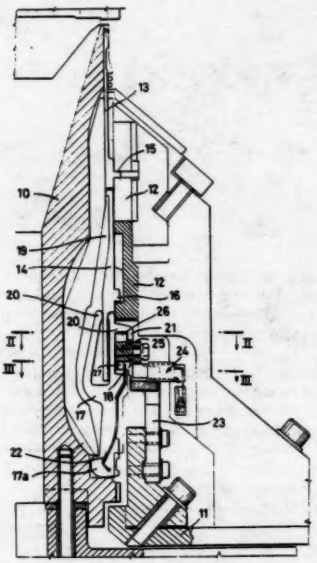
1. Device for flatbed knitting machines for monitoring the knitwear for falling-off, having at least one feeling lever which is supported on a support body adjustable in the longitudinal direction of the needle beds on a holding rail, which lever rests against the knitwear under pre-tension below the needle beds and which is coupled to a switching arm influencing an electric switching device, characterized in that the switching arm (25) is constructed as a contactless contactor which is arranged to be movable through a contact range of the electric switching device into an ineffective end position with a response movement of the feeling lever (17).

4,799,366

KNITTING OR HOSIERY MACHINE WITH ELECTRONIC-CONTROLLED, ELECTROMECHANICALLY ACTUATED SELECTION OF THE NEEDLES

Leopoldo Bertagnoli, Brescia, Italy, assignor to Orizio Paolo S.p.A., Rodengo Saiano, Italy

Filed Nov. 25, 1987, Ser. No. 125,570
Claims priority, application Italy, Aug. 4, 1987, 21586 A/87
Int. Cl.[4] D04B 9/10
U.S. Cl. 66—219 9 Claims



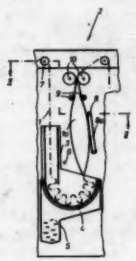
1. Knitting machine comprising (a) a holder component provided with a plurality of parallel slots, each of said slots receiving therein a needle, a needle pusher and a selection sinker, said selection sinker being coupled with said needle pusher for movement together with said needle pusher, perpendicularly to said slot, said needle and needle pusher being coupled for longitudinal movement inside the slot; (b) a support component needle and needle pusher control cams supported by the support component, the support component including a needle pusher lifting cam and a needle sinking cam; and (c) an electromechanical actuator for acting on the selection sinker; said needle, needle pusher selection sinker, said needle pusher control cams and electromechanical actuator being controlled to mutually move, the knitting machine being provided with a plurality of thread feed points, a stationary electromechanical actuator for each thread feed, said electromagentical actuator being associated with an extraction cam, a loading cam and a blanking-out cam, said selection sinker being equipped with an incorporated spring of ferrous material and said extraction cam being configured to act on a tooth formed along said selection sinker for extracting the selection sinker from its slot, said loading and blanking-out cams being arranged to act on the spring incorporated in the selection sinker, the electromagnetic actuator further including a demagnetizable region positioned between the loading cam and the blanking-out cam for selectively acting on the springs of the sinkers following the loading by said loading cam in accordance with signal input from an electronic control system.

4,799,367

APPARATUS FOR THE CONTINUOUS WET TREATMENT OF A LENGTH OF TUBULAR MATERIAL

Manfred Schulerer, Michelstadt, and Werner Koch, Wald-Michelbach, both of Fed. Rep. of Germany, assignors to Bruckner Apparatebau GmbH, Fed. Rep. of Germany

Filed Nov. 28, 1986, Ser. No. 935,927
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1985, 3544837
Int. Cl.[4] D06B 5/08
U.S. Cl. 68—13 R 10 Claims



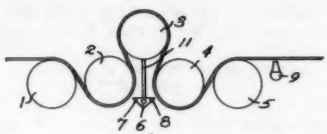
1. An apparatus for the continuous wet treatment of a length of material, wherein the apparatus has at least one accumulation chamber for storing a portion of the length of material and wherein the accumulation chamber has an accumulation chamber inlet an an accumulation chamber oulet, the apparatus comprising a changing device disposed immediately upstream of the accumulation chamber inlet, the changing device being capable of bodily shifting the entire width of the material from side to side relative to the width of the accumulation chamber inlet so as to cause the length of material to be evenly distributed within the accumulation chamber at the accumulation chamber inlet.

4,799,368

DEVICE FOR WASHING OF CARPETS

Osmo Tissari, Laaksopolku 1, SF-70910 Vuorela, Siilinjärvi, Finland

PCT No. PCT/FI85/00099, § 371 Date Aug. 8, 1986, § 102(e) Date Aug. 8, 1986, PCT Pub. No. WO86/03525, PCT Pub. Date Jun. 19, 1986
PCT Filed Dec. 10, 1985, Ser. No. 902,450
Claims priority, application Finland, Dec. 10, 1984, 844858
Int. Cl.[4] D06B 1/02, 15/02, 15/09, 23/04
U.S. Cl. 68—19.1 6 Claims



1. An apparatus for washing carpets, particularly carpets having a nap on one side thereof, having a conveyance path along which carpets to be cleaned are conveyed, said apparatus comprising:

a supporting roll mounted along said conveyance path and having a longitudinal axis disposed transverse to a longitudinal axis of said conveyance path for supporting a carpet to be cleaned during a washing process of the apparatus;

a rinsing roll mounted along said conveyance path, downstream of said supporting roll, having a longitudinal axis

disposed transverse to the longitudinal axis of said conveyance path, for supporting a carpet during a rinsing process of said apparatus;

a turning roll mounted intermediate said supporting roll and said rinsing roll, along said conveyance path, and spaced from a plane defined through said longitudinal axes of said supporting roll and said rinsing roll; and

a washing and rinsing apparatus mounted so as to be disposed intermediate and adjacent to said supporting roll and said rinsing roll, said washing and rinsing apparatus including means for conveying a washing fluid at high pressure to and directing said washing fluid toward said supporting roll and means for conveying a rinsing fluid at high pressure to and directing said rinsing fluid towards said rinsing roll,

whereby a carpet conveyed along said conveyance path is disposed in a convex configuration on said supporting roll and in a convex position on said rinsing roll and whereby fluids conveyed and directed by said washing and rinsing apparatus are impinged upon said convex portions of said carpet.

4,799,369

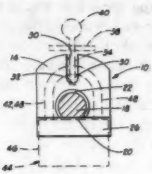
LOCK PROTECTOR

Thomas A. Goodson, 2717 NW. 157th St., and Ronald D. Truelove, 2713 NW. 157th St., both of Edmond, Okla. 73013

Filed Jul. 30, 1987, Ser. No. 79,885

Int. Cl.[4] E05B *67/38*

U.S. Cl. 70—54 **23 Claims**



1. A lock protector for a padlock, said lock protector comprising:

a pair of spaced body members adapted for receiving a shackle connected to said padlock therebetween, for preventing tampering access to said shackle, said body members defining aligned transverse slots therethrough parallel to legs of said shackle and adapted for receiving a locking eye therethrough engagable by said shackle; and

a neck member integrally formed with said body members and extending between said body members and between said legs of said shackle.

4,799,370

VIDEOCASSETTE SECURITY-LOCK-BOX

George R. Cooper, 683-½ W. Moorland Cir., Grand Junction, Colo. 81504

Filed Aug. 12, 1987, Ser. No. 84,200

Int. Cl.[4] E05B *65/52*

U.S. Cl. 70—63 **4 Claims**

1. A videocassette security box adapted to be removably affixed to a doorknob or other enlarged mounting member comprising;

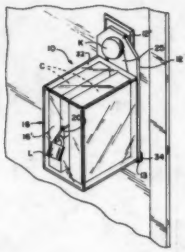
a substantially planar elongated unitary base having opposite lower and upper edges,

a substantially rectangular protective cover defining a box having an interior chamber and pivotally attached to said base adjacent said lower edge and adapted to house at least one videocassette,

said cover having a bottom and opposite top wall, an outer wall on said cover joining said bottom and top walls and provided with an orifice,

said base provided with a generally key-hole shaped opening including an enlarged portion communicating with a narrower elongated portion, said opening elongated portion disposed adjacent said base upper edge,

said cover closeable to a position with said top wall spanning said key-hole opening with at least a substantial part of said opening enlarged portion contained between said cover bottom and top walls and communicating with said interior chamber while at least a part of said opening elongated portion remains exposed exposed outside the bounds of said cover adjacent said top wall,



a lock extension member attached to and projecting from said base, said extension member having a free end provided with an opening adapted to receive securing means to retain said cover in a closed position whereby,

opening of said cover permits placement of said base opening enlarged portion over and behind a doorknob or other enlarged mounting member prior to movement of said plate to position said opening narrower elongated portion behind the doorknob or other enlarged mounting member following which closing of said cover blocks removal of said security box without first opening said cover to permit movement of said plate.

4,799,371

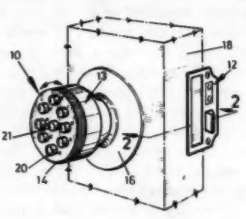
KEYLESS LOCK

Robert Duncan, Cambuslang, Scotland, assignor to Aardee Spring & Lock Co., Ltd., Glasgow, Scotland

Filed May 7, 1987, Ser. No. 47,874

Int. Cl.[4] E05B *37/16*

U.S. Cl. 70—214 **19 Claims**



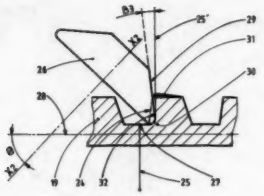
1. A keyless lock device comprising a housing having at least one lock release button disposed in a surface thereof and at least one lock element disposed on said surface, said lock release button being actuatable to define a plurality of lock positions and a plurality of lock release (position) positions and said lock element being operatively coupled to said lock release button, the arrangement being such that, in use, actuation of said lock release button a predetermined number of times attains one of said lock release positions whereby said keyless lock can be opened and actuation of said lock element actuates said lock release buttons to return to a locking position from said lock release position.

4,799,372

PROCESS FOR FORMING HELICAL SCREW THREADS HAVING A FLANK WITH ZERO OR NEGATIVE INCLINATION

Charles Marcon, 29, rue Letchworth Zac des Noirots, 71150 Chagny, and Jean Poullain, 32 avenue Boucicaut-La Verrerie, 71100 Chalon-sur-Saône, both of France

Filed Oct. 27, 1986, Ser. No. 923,215
Claims priority, application France, Oct. 28, 1985, 85 16324
Int. Cl.[4] B21H *03/00*
U.S. Cl. 72—102 18 Claims



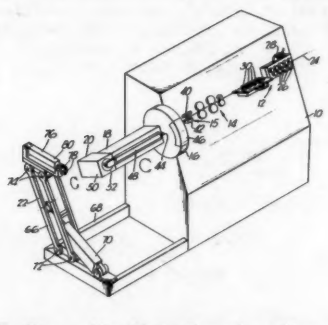
1. A process for forming on the wall of a rotationally symmetrical body, an inside or outside helical screw thread comprising a flank with zero or negative inclination, characterised by producing in a first phase, using a method such as machining, rolling or the like, a screw thread in which the flanks of each thread (23, 24) have positive inclination and then in a second phase, using a forming means, producing plastic deformation without removing material of the thread flank (24) which will be load-bearing in use, said deformation imparting a zero or negative inclination (32) to said flank.

4,799,373

BENDING MACHINE

Ronald E. Benton, "Mount Royal", Liphook Road, Headley, Hampshire, GU35 8LL, England

Filed Jan. 23, 1987, Ser. No. 8,129
Claims priority, application United Kingdom, Jan. 29, 1986, 8602147; Nov. 3, 1986, 8626229
Int. Cl.[4] B21D *7/022*
U.S. Cl. 72—307 15 Claims



1. A bending machine for bending wire, tubing, or other elongate material, comprising a support structure, feed means mounted on the support structure and arranged to feed such material along a feed axis of the machine,

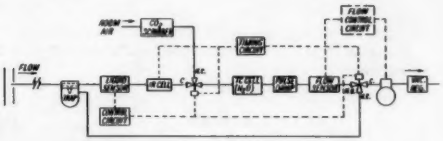
a support member supported by, and extending from, the support structure and rotatable about the feed axis, the member being substantially wholly to one side of the feed axis, a bending head supported by the support member and being rotatable therewith, the bending head being substantially wholly to one side of the feed axis and comprising a bending member cantilevered from the bending head and a reaction member cantilevered from the bending head and about which the material is bent by the bending member in a plane which plane contains the feed axis and which plane is fixed relative to the bending head and the support member, rotation of the support member allowing bending of the material in any selected plane containing the feed axis.

4,799,374

LIQUID SEPARATOR

Clayton J. Bossart, Monroeville; Glenn H. Fertig, Natrona Heights, and Albert L. Welker, Pittsburgh, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Nov. 13, 1987, Ser. No. 120,131
Int. Cl.[4] G01N *33/497, 21/84*
U.S. Cl. 73—1 G 4 Claims



1. A breath sampling system for measuring CO_2 in exhaled breath comprising:

a sampling conduit opening to an airway and a liquid trap having a substantially horizontal conduit with an inlet and an outlet, a reservoir chamber, a bottom outlet from the conduit opening to the reservoir chamber, a one-way valve means closing said bottom outlet and permitting flow only from the conduit to the reservoir chamber,

a liquid sensor having an outlet and an inlet interconnected by perfluorinated tubing to the trap outlet,

an infrared analyzer cell responsive to CO_2 having an outlet and an inlet connected to the liquid sensor outlet,

means to provide a constant flow through the liquid trap, liquid sensor and analyzer cell,

means responsive to the presence of liquid in the liquid sensor to direct the sample flow to the reservoir chamber and flow ambient air in a reverse direction through the analyzer cell and the liquid sensor to the reservoir.

4,799,375

INSTRUMENTED TEST HAMMER

Richard W. Lally, Clarence, N.Y., assignor to PCB Piezotronics, Inc., Depew, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,625
Int. Cl.[4] G01M *7/00*
U.S. Cl. 73—12 19 Claims

1. An instrumented test hammer for use in exciting a test object, comprising:

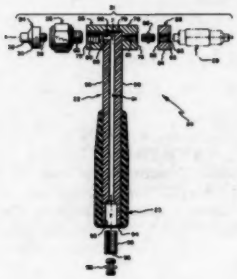
a head assembly having an impact tip and having a transducer operatively arranged to sense the force of an impact between said tip and object and to covert such force into a proportional electrical signal;

an elongated handle connected to said head assembly and extending away therefrom;

a cushioned grip surrounding a portion of said handle at a location spaced from said head assembly;

said grip being formed of a suitable material and said head assembly, handle and grip being so dimensioned and proportioned such that the node of the first translational resohant mode of said hammer, in the plane of the direction of impact and the handle axis, after impacting against said object, is located substantially proximate said head

assembly and substantially independently of the manner by which said grip is held;



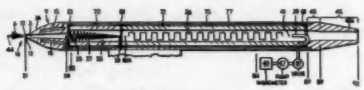
thereby to substantially avoid the generation of spurious electrical signals due to post-impact vibration of said head assembly.

4,799,376

CLOUD WATER MEASUREMENT

Walter F. Siedlecki, Jr., West Chester, and Kenneth R. Horst, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 26, 1985, Ser. No. 813,359
Int. Cl.[4] G01N *31/00*
U.S. Cl. 73—29 **4 Claims**



1. In a system for measuring the liquid water, water vapor and ice content of a moving airstream under icing conditions, the improvement, comprising:

(a) inlet means for collecting a sample of the airstream; and

(b) means for maintaining the sample in a substantially isokinetic state with respect to the moving airstream, said means including a dew point measuring means for measuring the dew point of the sample, and adjustment means for adjusting flow through the inlet means in order to alter the dew point of the sample.

4,799,377

DETECTOR FOR LEAKS OR ORIFICES

Michael R. Strong, Midland, Mich.; Allen T. Puder, Los Altos, Calif., and Ronald W. Wieck, Bay City, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 5, 1988, Ser. No. 152,776
Int. Cl.[4] G01M *3/26*
U.S. Cl. 73—40 **8 Claims**

1. Apparatus for testing for the existence and magnitude of leaks or orifices in individual cavities in a component which comprises a multiplicity of cavities extending into said component from a surface thereof comprising:

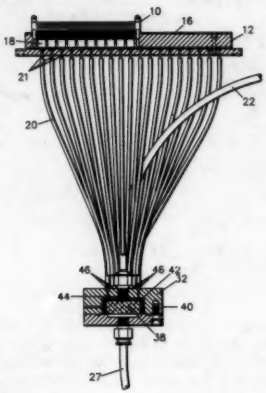
a manifold provided with resilient means for sealingly engaging said surface, to hermetically seal said cavities from the environment

a plurality of deformation resistant apertures protruding through said resilient means, said apertures being geometrically arranged to correspond to the arrangement of said cavities so that one aperture is in alignment with the opening of each cavity,

each of said apertures being connected by a conduit to a pressure sensing means,

supply means for simultaneously introducing a gas under pressure to each of said apertures, and

valve means for severing the said supply of gas to permit measurement by said sensors of the rate of decay of pressure in said cavities and,



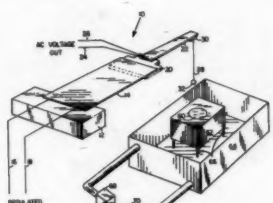
a plurality of manifolds, each of which is adapted to seal off from the environment a plurality of cavities, whereby a first leak detection test can be conducted to detect leaks in each group of cavities so sealed off, and in the event any such group is found to contain a leak, the first mentioned manifold can be employed to precisely locate the position and size of any such leak.

4,799,378

PIEZOELECTRIC VISCOMETER

Joseph L. Portman, Jr., San Antonio, and David J. Margraf, New Braunfels, both of Tex., assignors to Alcor, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 931,660, Nov. 17, 1986, Pat. No. 4,697,657, which is a continuation-in-part of Ser. No. 789,515, Oct. 21, 1985, Pat. No. 4,623,030. This application Jul. 29, 1987, Ser. No. 79,684
Int. Cl.[4] G01N *11/16*
U.S. Cl. 73—54 **14 Claims**



1. A device for measuring the viscosity of a fluid comprising:

a base;

a piezoelectric driver anchored to, but electrically isolated from, said base;

a piezoelectric receiver mechanically linked to, but electrically isolated from, said piezoelectric driver, for receiving vibrations therefrom;

a probe mounted essentially perpendicularly to said piezoelectric receiver, for immersion in said fluid;

an AC voltage source electrically connected to said piezoelectric driver, whereby said piezoelectric driver vibrates and transmits said vibrations to said piezoelectric receiver, said AC voltage having a frequency near the resonant frequency of said receiver; and

means for receiving output signals from said piezoelectric receiver as vibrations are received from said piezoelectric driver, said output signal giving said viscosity of said fluid, said receiving means comprising:

offset gain means to zero out said output signals when said probe is immersed in a first calibration fluid of known high viscosity; and

gain amplifier means to maximize said output signals when said probe is immersed in a second calibration fluid of known low viscosity.

4,799,379

APPARATUS FOR MEASURING THE MOISTURE CONTENT OF SNOW PARTICLES

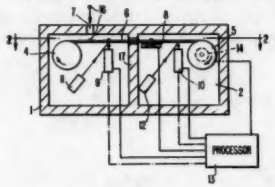
Nagaichi Suga, Tokyo, assignor to Suga Test Instrumenets Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1987, Ser. No. 136,634

Claims priority, application Japan, Dec. 24, 1986, 61-310437

Int. Cl.[4] G01W *1/14*

U.S. Cl. 73—76 **8 Claims**



1. An apparatus for measuring the moisture content of falling snow, comprising:

a sheet of water-absorbing material containing a material which generates a color upon having water added thereto;

means for moving said sheet from a snow receiving position to a first observation position and then to a heating position and then to a second observation position;

a first light receiving sensor in said first observation position and directed toward the surface of said sheet for measuring the area of color formed by absorption of moisture from snow particles received on the sheet when the sheet is in the snow receiving position;

a heater means at said heating position for heating said sheet to melt the snow particles thereon;

a second light receiving sensor in said second observation position and directed toward the surface of said sheet for measuring the area of color formed by the melted snow particles; and

calculating means connected to said light receiving sensors for calculating the ratio of the measured areas as a measurement of the moisture content of the snow particles.

4,799,380

ENGINE ROTATION SPEED DETECTING APPARATUS

Toru Suzuki; Masahide Sakamoto, and Akihito Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Automotibe Engineering, both of Tokyo, Japan

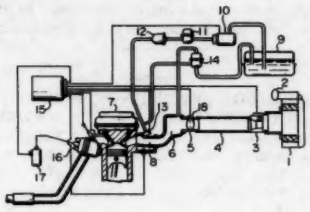
Filed Jan. 19, 1988, Ser. No. 145,234

Claims priority, application Japan, Feb. 2, 1987, 62-20548

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—116 **5 Claims**

1. An engine rotation speed detecting apparatus comprising means for sensing the state of operation of an engine, means for setting a plurality of respectively different masking periods of time, means for detecting an ignition signal lasting for a period of time longer than any one of said plural masking periods of time thereby detecting an ignition period defined between adjacent ignition signals, and means for computing the rotation



speed of said engine on the basis of said detected ignition period, one of said plural masking periods of time being selected according to the result of sensing by said operation state sensing means.

4,799,381

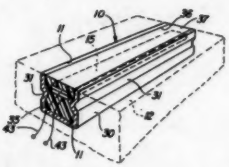
VEHICLE ROAD SENSOR

Corwin M. Tromp, Muskegon, Mich., assignor to CMI International, Inc., Southfield, Mich.

Filed Feb. 21, 1988, Ser. No. 155,496

Int. Cl.[4] G01G *3/14*; G01L *1/22*

U.S. Cl. 73—146 **18 Claims**



1. A vehicle road sensor for signaling the passage of a vehicle over a predetermined location on a roadway, comprising:

a force sensing resistor formed of a pair of overlapped nonconductive substrates, each having a controllable conductive coating, with the coatings being overlapped in adjacent surface to surface relationship;

at least one of said coatings being formed of a force responsive material characterized by normally resisting the passage of electrical current therethrough, but whose resistance decreases upon the application of pressure upon the coating;

and the second of said coatings having at least one area which precludes the passage of electrical current therethrough, and with said area being overlapped by a portion of the one coating so that said portion functions to shunt current across said area upon the application of pressure to said portion;

said substrates being completely embedded within a block formed of a resilient, rubber-like material;

said block having an upper, contact surface, with the substrates being embedded within the block beneath the contact surface so that vehicle pressure upon the contact surface is transmitted to the substrates;

means for normally applying an electrical potential to the second coating sufficient to induce the flow of current therethrough when the applied pressure reduces the electrical resistance of said portion;

means for detecting the flow of current through the second coating;

and the block forming material between the block contact

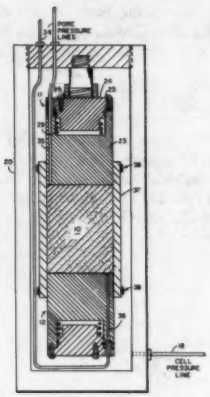
surface and the substrates being resiliently compressible under the weight of a vehicle for temporarily applying enough pressure to the portion of the one coating so that it temporarily functions as a shunt across the area which it overlaps so that electrical current temporarily flows through the second coating for indicating the temporary presence of a vehicle upon the block contact surface.

4,799,382

METHOD FOR DETERMINING RESERVOIR CHARACTERISTICS OF A POROUS MATERIAL

Eve S. Sprunt, Farmers Branch, and David P. Yale, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 1, 1987, Ser. No. 55,980
Int. Cl.[4] G01N *15/08*; E21B *49/02*
U.S. Cl. 73—153 **11 Claims**



1. A method for determining a measurement of reservoir characteristics of a core sample of a subsurface formation, comprising the steps of:

(a) surrounding said core sample with an elastic jacket,

(b) placing said sample in a confining pressure cell,

(c) cycling the pressure within the cell between a base pressure that is sufficient to reduce any cavity between said core sample and said elastic jacket and a plurality of successively increasing maximum pressures, and

(d) measuring the pore volume change between the base pressure and the maximum pressure for each pressure cycle.

4,799,383

VISUAL INDICATOR

Thomas C. Johnson, and Lenard W. Johnson, both of Roseau, Minn., assignors to LTJ Enterprises, Inc., Roseau, Minn.

Continuation-in-part of Ser. No. 910,231, Sep. 19, 1986, abandoned. This application Mar. 31, 1987, Ser. No. 33,064
Int. Cl.[4] G01F *23/00, 23/16*
U.S. Cl. 73—290 R **18 Claims**

1. A visual indicator, comprising:

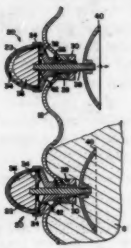
a transition mount:

an arcuate lens secured to one end of said transition mount, said lens having outside and inside surfaces;

a resilient, normally flat diaphragm secured between said lens and said transition mount to define a sealed chamber therein;

a filler plug disposed within said chamber and secured to said diaphram, said plug being movable with said diaphragm toward and away from said lens and being normally supported by said diaphragm in a position away from said lens;

said plug having an arcuate front side facing the opposite complementary inside surface of said lens, and a flat back side normally engaging said flat diaphragm over substantially the entire area of said diaphragm;



a substantially opaque liquid disposed within the chamber between said lens and said plug in order to normally block visibility of said plug; and

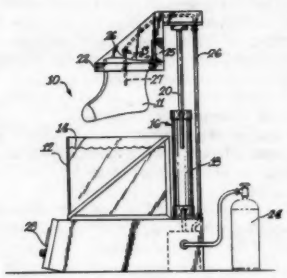
an actuator stem secured at one end to said diaphragm and plug and extending through a bore in said transition mount for actuating said plug toward said lens in order to displace said liquid and thereby visually expose the plug.

4,799,384

BOOTIE TESTING MACHINE

Gianpaolo Casali, via Galvani 6, Arbizzano-Verona, Italy (37020)

Filed Feb. 24, 1987, Ser. No. 17,832
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1986, 8632341[U]
Int. Cl.[4] G01M *3/06*
U.S. Cl. 73—45.5 **10 Claims**



1. Testing apparatus for detecting the leakage of air from an article of footwear comprising:

(a) a receptacle for containing liquid into which a footwear article to be tested is immersed;

(b) means for gripping the footwear article so that air introduced through a conduit into the opening of the footwear article and inflate the article without restraint whereby the means for gripping and conduit together provide a complete seal so that no air can escape, and;

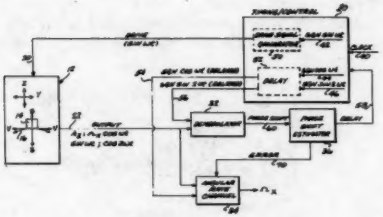
(c) a means to raise and lower the footwear article into said receptacle for testing.

4,799,385

ANGULAR RATE SENSOR WITH PHASE SHIFT CORRECTION

Rand H. Hulsing, Redmond, and Rex B. Peters, Woodinville, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jul. 10, 1987, Ser. No. 72,235
Int. Cl.[4] G01P 9/04
U.S. Cl. 73—505 19 Claims



15. A device for generating an angular rate signal representing the angular rate of rotation of a body, the device comprising:

an accelerometer assembly comprising an accelerometer having a force sensing axis and including means for producing an output signal indicative of acceleration along the force sensing axis, means for mounting the accelerometer such that the accelerometer can be vibrated along an arc that is tangent to a vibration axis normal to the force sensing axis, and drive means connected to receive a periodic drive signal having a first frequency and to vibrate the accelerometer along the arc at said frequency, such that the output signal includes a component at a second frequency equal to twice the first frequency;

timing/control means including means for generating the drive signal, means for generating a timing signal such that the timing signal represents a rate component at the first frequency in quadrature phase with respect to the drive signal and a phase shift component at the second frequency in phase with the drive signal, and means for delaying the timing signal by a time delay that is a predetermined function of a delay signal;

demodulation means including means for demodulating the output signal using the rate component to produce the angular rate signal representing the angular rate about an axis normal to the sensitive and vibration axes, and means for demodulating the output signal using the phase shift component to produce a phase shift signal; and

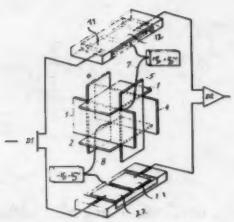
delay control means connected to receive the phase shift signal and including means for producing an offset signal representing the estimated difference, at the second frequency, between the phase shift corresponding to the time delay and the phase shift between the drive signal and the periodic components of the output signal, means for comparing the offset signal to the phase shift signal to produce an error signal representing the difference therebetween, and means responsive to the error signal for producing the delay signal such that the error signal is driven toward a null value.

4,799,386

ELECTROSTATIC ACCELEROMETER WITH DUAL ELECTRICAL CONNECTION TO ITS TEST MASS

Alain Bernard, Fresnes, and Pierre Touboul, Guyancourt, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed Dec. 30, 1986, Ser. No. 10,441
Claims priority, application France, Dec. 31, 1985, 8519469
Int. Cl.[4] G01P 15/125, 3/44
U.S. Cl. 73—517 B 4 Claims



1. Apparatus for sensing acceleration along an axis comprising:

a test weight suspended by electrostatic forces, the test weight having mutually insulated first and second planar electrodes extending at a right angle to the axis on opposite sides of a first center line of the test weight, the first center line being at a right angle to the axis;

means for applying equal amplitude but opposite polarity a.c. and d.c. voltages to the first and second electrodes on the test weight;

first and second sets of fixedly mounted planar electrodes extending at right angles to the axis, the sets of electrodes being spaced from the test weight, the electrodes of the first and second sets being divided into first and second elements positioned on opposite sides of a second center line of the test weight, the second center line being at a right angle to the first center line, whereby the elements of the first and second electrode sets form third, fourth, fifth and sixth electrodes and first, second, third and fourth capacitors are respectively established between the first and third electrodes, the second and fourth electrodes, the first and fifth electrodes and the second and sixth electrodes, the third and fourth electrodes being connected together, the fifth and sixth electrodes being connected together; and

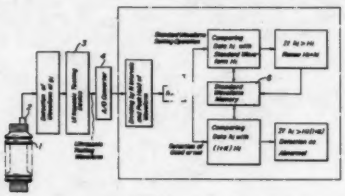
means responsive to voltages developed at the third, fourth, fifth and sixth electrodes for developing first and second restoring electrostatic forces and for applying the restoring electrostatic forces to the third, fourth, fifth and sixth electrodes, the amplitude of at least one of the restoring forces being a measure of the acceleration experienced by the test weight relative to the fixedly mounted electrodes; the means for developing and applying restoring forces comprising: means for deriving first and second signals respectively responsive to the a.c. voltages at the third and fourth electrodes and at the fifth and sixth electrodes, means combining the first and second signals for deriving first and second restoring voltages, and means for respectively supplying the first and second restoring voltages to the third and fourth electrodes and to the fifth and sixth electrodes; the combining means deriving the sum and difference of the values of the first and second signals to derive third and fourth signals respectively indicative of translational acceleration of the test body along the axis and of rotary acceleration of the test body about a reference point of the test body.

4,799,387

AUTOMATIC ULTRASONIC TESTING METHOD

Junichi Matsuo, Chita, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Dec. 1, 1987, Ser. No. 127,054
Claims priority, application Japan, Jan. 14, 1987, 62-6973
Int. Cl.[4] G01N 29/04
U.S. Cl. 73—620 3 Claims



1. An automatic ultrasonic testing method for automatically detecting an internal flaw of articles in which ultrasonic noises are generated in an ultrasonic testing waveform at a number of detecting points, said method comprising the steps of

(a) setting a standard waveform in a standard waveform memory by

effecting an ultrasonic test for a normal article having no internal flaws to obtain an ultrasonic testing waveform at a first detecting point,

dividing the ultrasonic testing waveform into a predetermined number of intervals along a time axis,

effecting a peak hold operation in all the intervals to obtain maximum data in every interval,

storing the maximum data in the standard waveform memory,

effecting the same peak hold operation at a next detecting point for all the intervals,

renewing the maximum data in the standard waveform memory by the peak hold data at the next detecting point if the data at the next detecting point is larger than that at the previous point, and

effecting the same processing steps for all the detecting points,

(b) effecting the ultrasonic test for an article to be tested at the same detecting points as those for the standard waveform setting step to obtain ultrasonic testing waveforms,

(c) comparing the ultrasonic testing waveform for the tested article either before or after processing of the waveform with the standard waveform successively at all the detecting points, and

(d) detecting the article to be tested as a normal one when a level of the ultrasonic testing waveform is not beyond that of the standard waveform at all the detecting points.

4,799,388

APPARATUS AND TECHNIQUE FOR METERING LIQUID FLOW

Robert M. Hunter, 320 S. Willson Ave., Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 846,516, Mar. 31, 1986, abandoned. This application May 19, 1987, Ser. No. 51,325
Int. Cl.[4] G01F 1/44
U.S. Cl. 73—861.63 23 Claims

1. A method of metering the flow of liquid which is flowing by gravity in an elongated pipe that is open to atmosphere, comprising:

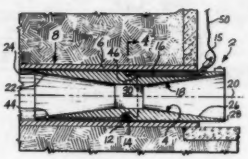
installing in the pipe a tubular venturi metering device which has an open-ended bore therethrough having an axis extending end-to-end thereof,

arranging the device in the pipe so that the axis of the bore is disposed substantially parallel to the longitudinal axis of the pipe and the bore thus has an end which is normally oriented upstream of the liquid flow in the pipe and an end which is normally oriented downstream of the liquid flow of the pipe,

the bore having an axially inwardly tapered entrance section adjacent the upstream end thereof which converges toward the axis of the bore in vertical planes paralleling the axis of the bore relatively toward the downstream end of the bore but terminates short of the axis of the bore so that a throat is formed in the bore which opens to the downstream end thereof,

forming a liquid seal between the device and the pipe at the outer periphery of the device so that the liquid in that section of the pipe disposed upstream from the upstream end of the bore of the device, is constrained to flow through the bore of the device, relatively toward the downstream end thereof,

determining the static pressure of the liquid in the aforesaid upstream section of the pipe when the liquid is flowing in



the pipe at a depth less than that adapted to fill the upstream section of the pipe, to meter the flow in the pipe for the less-than-full condition thereof,

configuring the cross-sectional area of the throat, relative to that of the upstream section of the pipe, transverse the respective axes thereof, so that the throat will fill with liquid substantially simultaneously with the upstream section of the pipe, when the liquid depth rises therein, and

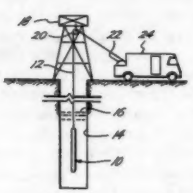
providing means whereby the static pressure of the liquid in the throat of the device and the upstream section of the pipe can be determined when both the upstream section of the pipe and the throat are filled, so that the difference between the latter two pressures can be determined to meter the flow in the pipe for the full condition thereof, and thereby enable the flow in the pipe to be metered for the full condition thereof as well as the less-than-full condition thereof and the transition therebetween.

4,799,389

TANDEM SAMPLER ACTUATION DEVICE

Owen T. Krauss, Dartmouth, and Norman G. Gruber, Halifax, both of Canada, assignors to Western Atlas International, Inc., Houston, Tex.

Filed Feb. 19, 1987, Ser. No. 16,335
Int. Cl.[4] G01N 1/16
U.S. Cl. 73—863.31 15 Claims



1. An apparatus to trigger the closing of at least one spring-actuated valve within one end of a sampler, comprising in combination:

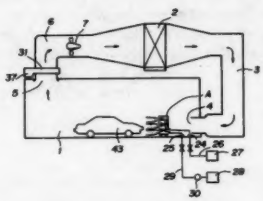
(a) a housing having a plurality of ports extending therethrough coupled to the end of said sampler;
(b) first means slideably received within said housing for engaging said spring-actuated valve;
(c) second means axially received by said first means for triggering said first means;
(d) bearing means disposed within said first means between said housing and said second means for partially engaging at least one of said plurality of ports extending through said housing, releasably locking said first means therein in a first position; and
(e) means for driving said second means in a first direction within said first means, releasing said bearing means from partially within said at least one of said plurality of ports whereby said spring-actuated valve is allowed to close, driving said first means in a second direction.

4,799,390

SNOW-WEATHERING TEST APPARATUS FOR SELF-PROPELLED VEHICLE

Chugo Kimura, Tokyo, Japan, assignor to Kabushiki-Kaisha Toyo Seisakusho, Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,458
Int. Cl.[4] G01M *17/00*
U.S. Cl. 73—865.6 **7 Claims**



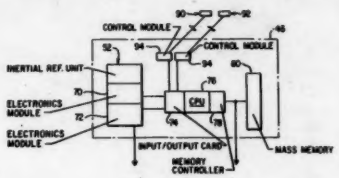
1. A snow-weathering apparatus for evaluating the reaction of a self-propelled vehicle to snow conditions, said apparatus comprising:
(a) a low-temperature testing chamber;
(b) a water spraying unit positioned on a movable truck supported by a plurality of wheels, said truck including at least a dual-fluid injection nozzle system comprising means for spraying water with an air jet in the form of a mist, said water spraying unit being movably positioned within said low-temperature testing chamber;
(c) a cooling unit and an air-feeding duct which connects the interior of said low-temperature testing chamber and said cooling unit, said duct comprising means for feeding cool air issued by said cooling unit to said low-temperature chamber;
(d) an air-return duct connected to both said low-temperature testing chamber and to said cooling unit, said air-return duct comprising means for conducting cooling air back to said cooling unit from said testing chamber; and
(e) a snow catching unit positioned within said air-return duct, said snow catching unit including a heating member, said snow catching unit comprising means for catching snow carried by cooling air from said low-temperature testing chamber, said heating member comprising means for melting snow caught by said snow catching unit, said snow catching unit further including an upper opening, a substantially endless movable belt for retaining said snow, and means for removing snow melted by said heating member from said snow catching unit.

4,799,391

METHOD FOR SURVEYING FLUID TRANSMISSION PIPELINES

Pedro F. Lara, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 944,308, Dec. 18, 1986, Pat. No. 4,747,317.
This application Mar. 31, 1988, Ser. No. 175,973
The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.
Int. Cl.[4] G01C *9/06*
U.S. Cl. 73—865.8 **10 Claims**



1. A method for determining a change in curvature of a fluid transmission pipeline comprising the steps of:
providing means comprising a pipeline pig having a body and support means for supporting said body in said pipeline in a predetermined position with respect to a longitudinal central axis of said pipeline, said pig including an inertial reference unit mounted on said body and including at least one of means for sensing accelerations normal to said longitudinal axis and means for sensing angular velocities normal to said longitudinal axis, means for generating signals related to at least one of said accelerations and said angular velocities, and means for recording further signals related to said signals generated by said means for generating signals;
reading signals generated by said at least one of said means for sensing accelerations and said means for sensing angular velocities at a rate which exceeds the natural frequency of vibration of said pig with respect to said pipeline; and
determining at least one of an acceleration and angular velocity, respectively, in at least one of a vertical plane and a tangential plane normal to said vertical plane, said planes passing through said longitudinal axis, and from said readings of said signals, respectively, for detecting a change in curvature of said pipeline.

4,799,392

METHOD FOR DETERMINING SILICON (MASS 28) BEAM PURITY PRIOR TO IMPLANTATION OF GALLIUM ARSENIDE

Syd R. Wilson; Robert P. Lorigan, and Richard L. Peterson, all of Phoenix, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 6, 1987, Ser. No. 82,410
Int. Cl.[4] G21K *5/00*
U.S. Cl. 73—865.9 **5 Claims**

1. A method for determining silicon (mass 28) beam purity prior to implanting a gallium arsenide substrate comprising the steps of:
forming a lattice disruption calibration scale;
implanting silicon (mass 28) in a monitor wafer of a substrate other than gallium arsenide;
analyzing lattice disruption caused to said monitor wafer by the implanted silicon; and
comparing lattice disruption in said monitor wafer to the lattice disruption of said lattice disruption calibration scale to find the purity of said beam.

4,799,393

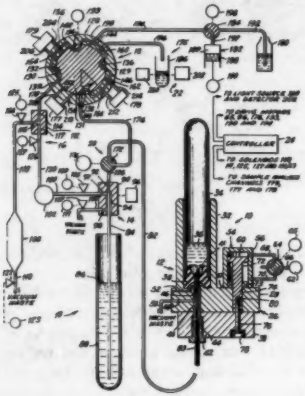
COMBINED CLOSED AND OPEN TUBE SAMPLING APPARATUS AND METHOD

Kenneth F. Uffenheimer, Chappaqua, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 771,895, Sep. 3, 1985, abandoned. This application Nov. 20, 1987, Ser. No. 124,352

Int. Cl.[4] B01L *3/02*

U.S. Cl. 73—864.22 17 Claims



6. In sampler apparatus which include sample supply means to supply samples from a closed sample container by introducing operatively connected sample aspiration means thereinto, and means to remove said sample aspiration means from said closed sample container following sample aspiration, the improvements comprising, rinse means operatively connected to said sample supply means and operable upon the removal of said sample aspiration means from said closed sample container following sample aspiration therefrom to flow a rinse through said sample supply means and said sample aspiration means against the direction of aspirated sample flow therethrough thereby backflushing said sample supply means and said sample aspiration means to remove aspirated sample residue therefrom, said sample aspiration means comprising a generally vertically oriented sampling needle having a sample aspirating opening at the upper portion thereof, and wherein said rinse means are operable to flow said rinse through the interior of said sampling needle and out of said sampling needle opening for free downward flow around the exterior of said sampling needle to thereby remove aspirated sample residue from both the interior and exterior of said sampling needle.

4,799,394

ANALYZER BLOCK FOR SEALING AND ISOLATING ANALYZER GAS SAMPLE FLOW

Daniel C. Barnett, Concord Twp., Lake County, and George R. Hall, II, Wickliffe, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 3, 1987, Ser. No. 92,495

Int. Cl.[4] G01N *1/24*

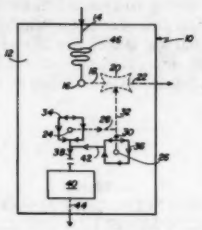
U.S. Cl. 73—864.81 10 Claims

1. A device for sealing and isolating analyzer gas sample flow in a system having an aspirator, the aspirator having gas sample inlet means for drawing a sample gas flow therein and supply air inlet means, and wherein the device comprises:

a plurality of plate members joined together into a rigid structure, said plate members having sealing surfaces;

seal means for sealingly engaging the sealing surfaces of the plate members together;

at least one of said plate members including flow channel means formed in the respective sealing surface for passing fluid flow along said sealing surface, the flow channel means including an air supply passage for passing air to the aspirator supply air inlet means, the channel means further including a sample gas passage for passing gas to be sampled to the aspirator gas sample inlet means, at least a portion of the air supply passage and a portion of the sample gas passage being formed on said sealing surface at spaced locations from each other, said portion of the sample gas passage having openings in said sealing surface, and said channel means further including a drain



passage having drain channels each of which encircles one of said openings of said portion of the sample gas passage in said sealing surface;

at least one of said plates including a cavity, at least one of said plates including restrictive passage means in fluid communication between the drain passage and cavity sized so as to provide a full drop in supply air pressure to ambient pressure conditions for fluid passing from the drain passage to the cavity; and

outlet means for exhausting fluid from the cavity to the atmosphere.

4,799,395

MOTOR VEHICLE GEARBOX WITH ONE-WAY CLUTCH IN FIRST GEAR

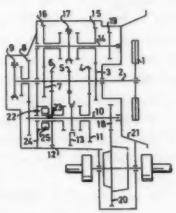
Grzegorz K. Janiszewski, Angered, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Jun. 2, 1986, Ser. No. 869,966

Claims priority, application Sweden, Jul. 1, 1985, 8503263-9

Int. Cl.[4] F16H *3/10*

U.S. Cl. 74—331 3 Claims



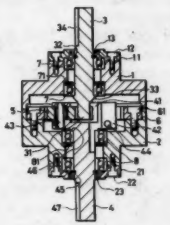
1. Motor vehicle gearbox, comprising a housing with at least one input shaft and at least one intermediate shaft having gears engaging gears on the input shaft, at least one gear in each pair of interengaging gears being releasable/from its shaft, characterized in that a one-way clutch is connected between only the releasable gear for a lowest forward gear speed and a member solid with the housing, said one-way clutch blocking the releasable gear for the lowest forward gear speed against rotation in a direction opposite the rotational direction for driving forward, said releasable gear for the lowest forward gear speed having a speed of rotation lower than that of said input shaft.

4,799,396

REDUCTION GEAR

Takeshi Ito, Nagano, Japan, assignor to Machine Engineering Co., Ltd., Nagano, Japan

Filed Mar. 25, 1987, Ser. No. 29,516
Claims priority, application Japan, Mar. 25, 1986, 61-64822; Sep. 19, 1986, 61-222545
Int. Cl.[4] F16H 57/00, 1/28
U.S. Cl. 74—410 9 Claims



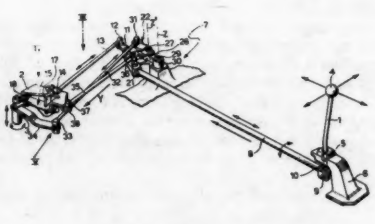
1. A speed-change gear, comprising:
a housing;
a first annular internal gear fixed in said housing;
a first pinion disposed in said housing concentrically with said first internal gear;
a first shaft provided integrally with said first pinion and rotatably supported in said housing;
a plurality of first planet gears geared with said first pinion and said first internal gear;
a second shaft rotatably supported in said housing, said planet gears being supported by said second shaft with at least one circumferential inter-axes interval therebetween, said second shaft having at least two support portions respectively supporting said first planet gears and being circumferentially movable with respect to each other; and
first means for changing a size of said inter-axes interval of said first planet gears by circumferentially moving said support portions with respect to each other, wherein said first changing means includes a screw threaded in one of said support portions and having an axial end contactable with another of said support portions.

4,799,397

CONTROL DEVICE FOR A MOTOR VEHICLE GEARBOX

Corrado Egidi, and Riccardo Mongiano, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 4, 1987, Ser. No. 129,116
Claims priority, application Italy, Dec. 4, 1986, 67904 A/86
Int. Cl.[4] G05G 9/16
U.S. Cl. 74—473 R 5 Claims



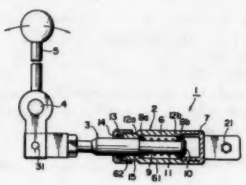
1. A control device for a motor vehicle gearbox comprising a manual gear lever supported by the structure of the vehicle in a position remote from the gearbox and movable with a selection movement and a movement for engaging the speed ratios of the gearbox, an actuator member which is located at the input of the gearbox and is translatable and rotatable in response to the selection and engagement movements of the gear lever, and a transmission interconnecting the gear lever and the actuator member of the gearbox said transmission including a bar articulated to the gear lever and extending substantially along the longitudinal axis of the vehicle, a drive lever pivotable about a first substantially vertical axis which is rotatable about a second substantially vertical axis fixed relative to the structure of the vehicle, first and second rods extending substantially transverse the longitudinal axis of the vehicle and operated by the bar through the drive member to effect the translation and the rotation of the actuator member of the gearbox respectively, and a reaction tie rod connecting the pivotable drive member to the structure of the gearbox substantially in the direction of the two rods.

4,799,398

SAFETY DEVICE FOR CONTROL LEVER OF CONSTRUCTION MACHINES

Akio Asano, Kuki, Japan, assignor to Mikasa Sangyo Co., Ltd., Japan

Continuation-in-part of Ser. No. 6,463, Jan. 16, 1987, abandoned. This application Jan. 13, 1988, Ser. No. 144,802
Claims priority, application Japan, Jun. 10, 1986, 61-087214
Int. Cl.[4] G05G 7/00; E01C 19/26
U.S. Cl. 74—473 R 3 Claims



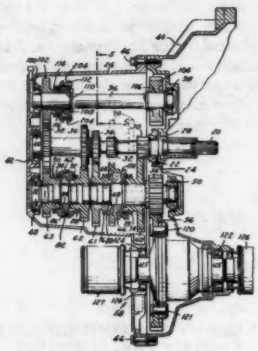
1. A safety device for the control lever of a construction machine having hydrostatic transmission which comprises:
a casing provided on the machine;
a control rod which is rotatably connected at one end portion thereof with the control lever associated with the hydrostatic transmission of the machine, said control rod being formed with a slender portion at the other end portion which is slidably accommodated by the casing, and said slender portion having a snap ring at the end thereof; and
a coil spring which is interposed on the slender portion, said coil spring being provided at each end thereof with a washer;
said casing being provided on the inner wall thereof with each engaging portion which engages with each of said washers, and said coil spring being stressed within the casing sufficiently to automatically return the control lever to neutral position; and, wherein said control rod is provided at the end of the casing with an annular friction member and is provided adjacent to the friction member with an adjusting member covering the friction member, said adjusting member being threadably mounted on the casing so that rotation of the adjusting member varies the slide speed of the control lever depending on compression of the friction member.

4,799,399

MANUALLY CONTROLLED MULTIPLE SPEED RATIO TRANSMISSION

Robert W. Bruce, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 8, 1981, Ser. No. 299,905
Int. Cl.[4] G05G 5/10; F16H 3/08; B60K 20/10, 20/00
U.S. Cl. 74—477 4 Claims



1. A multiple speed ratio manual transmission for an automotive vehicle comprising:

a power input shaft;

a first countershaft;

gearing defining multiple torque delivery paths including multiple pairs of gears carried by the input shaft and by the first countershaft;

first synchronizer clutch means engageable with one gear of each pair for connecting said one gear to the shaft on which it is carried;

a second countershaft;

a gear carried by the second countershaft meshing with one gear carried by the input shaft that is a member of one of the aforementioned gear pairs;

a second synchronizer clutch means for connecting the second countershaft to the gear carried thereon;

a differential mechanism;

torque output gearing connecting the differential to the first and second countershafts including a first output gear carried by the first countershaft a second output gear carried by the second countershaft, each output gear meshing with a final drive gear that drives the differential;

a gear ratio selector shaft mounted for linear movement along its axis and rotation about its axis;

a first selector block fixed to the selector shaft;

a relay lever mounted for rotation about and axial displacement along an axis that extends transversely with respect to the gear ratio selector shaft having one arm connected to the first selector block, whereby linear movement of the selector shaft produces rotation of the relay lever and rotation of the selector shaft produces linear movement of the relay lever;

a first shift rail mounted for rotation about and axial displacement along an axis that extends transversely with respect to the axis of the gear ratio selector shaft and connected to the relay lever;

first shift fork means carried by the first shift rail, engaged with the first synchronizer clutch means, selectively connectable to the first shift rail; and

a second shift rail selectively connectable to the first shift rail, mounted for linear movement along its axis:

second shift fork means carried by the second shift rail engaged with the second synchronizer clutch means selectively connectable to the first shift rail;

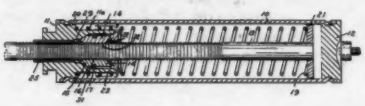
whereby rotation of the selector shaft connects either the first, or second shift fork means to the first shift rail and linear movement of the selector shaft after such connected is made produces a driving connection between one gear of each pair to the first countershaft or a driving connection between the second countershaft and the gear carried thereon.

4,799,400

SELF-ADJUSTING CABLE CONTROL DEVICE

John M. Pickell, Highland, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Continuation of Ser. No. 832,526, Feb. 21, 1986, abandoned.
This application Nov. 6, 1987, Ser. No. 120,721
Int. Cl.[4] F16C 1/10
U.S. Cl. 74—502.6 10 Claims



1. A self-adjusting automatically compensating cable control device in a control cable system comprising

a termination member adapted to be connected at one end of a control cable and having longitudinally spaced serrations on the exterior thereof,

a connecting member adapted to be attached to an actuation member,

a plurality of collet members having longitudinally spaced serrations thereon normally engaging the serrations on said termination member,

spring means interposed between said termination member and said connecting member for moving the termination member longitudinally relative to the connecting member when the collet members are disposed from the termination member,

said connecting member having a portion forming an internal conical surface and a portion having an external conical surface,

said internal conical surface and said external conical surface on said connecting member being spaced longitudinally from one another in fixed relation on said connecting member,

said collet members being positioned longitudinally between said internal conical surface and external conical surface on said connecting member,

said collet members being movable radially outwardly to disengage the serrations on the collet members from the serrations on the termination member over the complete length of the serrations on the collet members,

said collet members having external conical surfaces adapted to engage said internal conical surface on the connecting member for engaging the serrations on the collet members with the serrations on the termination member,

the axial length of each said collet member between the external conical surface and internal surface thereon being less than the axial distance between said internal surface and said external surface on said connecting member,

said collect members having internal conical surfaces adapted to engage said external conical surface on the connecting member for disengaging the serrations on the collect members from the serrations on the termination member,

said collet members being movable longitudinally between a first position wherein the external surfaces of said collet members are in engagement with the internal surface of said connecting member and a second position wherein said internal surfaces of said collect members are in engagement with said external surface on said connecting member

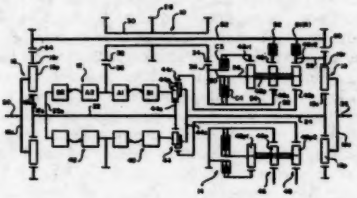
said collet members being in said first position wherein the internal surface of said connecting member and the external surfaces of said collet members are in engagement and with said serrations on said collet members in normal engagement with said serrations on said termination member when there is an external actuation force on said termination member and when the force on said termination member is reduced below a predetermined amount, said spring means acting on said termination member causes said termination member to move said collet members longitudinally to bring the collet members to said second position and cause said internal conical surfaces on said collet members to engage the external conical surface on said connecting member forcing the collet members to move radially outwardly and disengaging the serrations over the complete length of the serrations on said collet members from the serrations on the termination member allowing the spring means to move the termination member axially relative to the collet member and the connecting member until the force on the termination member is re-established to a predetermined amount.

4,799,401

EXTENDED RANGE HYDROMECHANICAL STEERING TRANSMISSION

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 18, 1987, Ser. No. 98,165
Int. Cl.[4] F16H *47/0*
U.S. Cl. 74—677 **14 Claims**



1. In a synchronous shifting, multi-range, split output hydromechanical transmission having a mechanical input drive train, a hydrostatic unit driven by said input drive train, and a set of combining gears for producing a transmission output, said set of combining gears including a first element connected to said hydrostatic unit such as to be driven hydrostatically to operate said transmission in a first range and a second element; a range changing mechanism comprising, in combination:

A. a compound planetary gear set including

(1) a planetary carrier,

(2) a first planetary gear including

(a) a first pinion gear set mounted on said planetary carrier,

(b) a first sun gear intermeshing with said first pinion gear set, and

(c) a first ring gear intermeshing with said first pinion gear set, and

(3) a second planetary gear including

(a) a second pinion gear set including a plurality of duplex pinion gears, each having common first and second drivingly interconnected gear sections, said second pinion gear set mounted on said planetary carrier,

(b) a second ring gear intermeshing with said first gear sections of said duplex pinion gears,

(c) a third ring gear intermeshing with said second gear sections of said duplex pinion gears, and

(d) a second sun gear intermeshing with one of said first and second gear sections of said duplex pinion gears;

B. first means drivingly connecting said third ring gear to said second element of said combining gear set;

C. second means drivingly connecting said input drive train to said compound planetary gear set;

D. third means drivingly connecting said hydrostatic unit to said compound planetary gear set; and

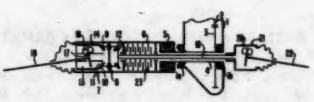
E. fourth means for selectively activating and inactivating elements of said compound planetary gear set such that, in response to the application of said mechanical and hydrostatic inputs to said compound planetary gear set from said input drive train and said hydrostatic unit, respectively, said first element of said combining gear set is hydrostatically driven and said second element of said combining gear set is hydromechanically driven in a manner to operate said transmission in at least two higher ranges in addition to said first range, said fourth means including a first brake for selectively inactivating said thrid ring gear to lock out said range changing mechanism and thus operate said transmission in said first range by the hydrostatic input applied to said first element of said combining gear set by said hydrostatic unit.

4,799,402

TRANSMISSION DEVICE FOR A FRONT WHEEL DRIVE VEHICLE

Jean Claude Van Dest, Saintry s/Seine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Apr. 27, 1987, Ser. No. 42,956
Claims priority, application France, Apr. 25, 1986, 86 06022
Int. Cl.[4] F16H *37/08*
U.S. Cl. 74—701 **20 Claims**



1. A transmission device disposed between an output member of an engine-drive unit and transmission shafts connected to driving wheels of a motor vehicle, said device comprising a first hollow shaft drivingly connected to the coaxial with a second hollow shaft comprising an output member of the engine-drive unit, means comprising a pair of bearings disposed within a case of the engine-drive unit for supporting the second shaft, said first shaft being disposed outside of the case and outside of a space defined between the pairs of bearings, a differential mechanism disposed in said first hollow shaft and comprising an input element integral with the first hollow shaft and two coaxial output elements each connected to a joint associated with a respective one of said transmission shafts, one of the two output elements of the differential mechanism being connected to the associated joint through an intermediate shaft extending inside said first hollow shaft.

4,799,403

ADJUSTING GEAR IN MOTOR VEHICLES

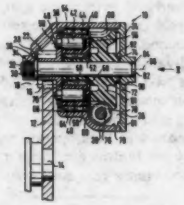
Emil Dinkel, Coburg; Bernd Mann, Pfarrweisach; Günter Prieser, Coburg, and Gerhard Schneyer, Grosswalbur, all of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 104,078
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1986, 3634020
Int. Cl.[4] F16H *3/44, 57/10*
U.S. Cl. 74—788 **19 Claims**

1. An adjusting gear for a motor vehicle, comprising essentially pot-shaped transmission housing means having a bottom, a bearing shaft in said transmission housing means, a plurality of elements mounted on said bearing shaft which, starting from the bottom of the pot-shaped housing means, include in sequence an output member, a planet gear carrier non-rotatable connected with the output member and having at least two planet gears supported on bearing pins, said planet gears mesh-

BEST COPY AVAILABLE

ing with internal teeth in the transmission housing means, a sun gear also meshing with the planet gears, and a worm gear non-rotatably connected with the sun gear which meshes with a worm adapted to be driven by a driving motor, an end face of the planet gears opposite the pot bottom being provided with at least one orientation surface for oriented mounting on



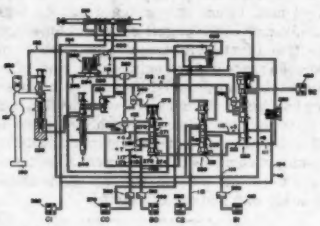
the bearing pins, the worm gear being provided on its end face opposite the pot bottom with at least one orientation surface for oriented mounting on the bearing shaft, and the end face of the planet gears being each provided with an abutment surface abutting at the backside of the worm gear which is disposed opposite the end side of the worm gear.

4,799,404

INTERMEDIATE SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION

Masato Shimei, Nagoya; Shigeki Goto, Toyota, and Shigeo Takahashi, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 24, 1987, Ser. No. 29,606
Claims priority, application Japan, Mar. 24, 1986, 61-63946
Int. Cl.[4] B60K *41/06*
U.S. Cl. 74—869 **21 Claims**



1. A control apparatus for an automatic transmission connected to a hydraulic control circuit having a first changeover valve for switching a main transmission mechanism having at least two speed ratios between high and low speed ratios in dependence upon at least vehicle velocity, and a second changeover valve for switching an auxiliary transmission mechanism, which is provided in addition to the main transmission mechanism and has at least two speed ratios, between high and low speed ratios at a vehicle velocity higher than a changeover velocity of the first changeover valve,

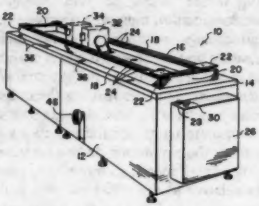
said control apparatus comprising a third changeover valve for switching the auxiliary transmission mechanism from the low to the high speed ratio at a vehicle velocity lower than the changeover velocity of the first changeover valve, and from the high to the low speed ratio when the vehicle velocity rises above the changeover velocity of the first changeover valve.

4,799,405

ASSEMBLY MACHINE CHASSIS

William E. Beezer, 73 N. Bayard La., and Earl F. Beezer, 24 Macoun Dr., both of Mahwah, N.J. 07430

Filed Apr. 9, 1987, Ser. No. 36,116
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—822 **20 Claims**



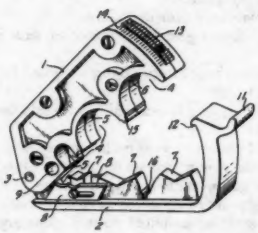
1. An assembly machine chassis comprising: a quadrangular guide way having opposite spaced apart side segments and opposite spaced apart end segments with four corners connected between said side and end engagements: a plurality of pucks slidably mounted along each segment of said guide way, each puck having a site for receiving and holding an object to be moved along said guide way by an by indexed length, each puck being shaped so as to be movable at said corners between a side segments and an end segment; a walking beam mounted for linear walking motion parallel to an adjacent one of each said side and end segment, each walking beam having an engagement position engaged with respective said segment by one index length to move each puck in its associated said segment by one indexed length, each walking beam having a non engagement position spaced from each associated one of said pucks of its associated said segment; and translator means connected to each walking beam for moving each walking beam from its non-engagement position to its engagement position, then along its segment by one indexed length and then back to its non-engagement position.

4,799,406

APPARATUS FOR STRIPPING ELECTRICAL WIRES AND THE LIKE

Pablo Diaz-De-Guereau-Aguirrebeitia, Po martutene s/n C. Iru-Lagunak, San Sebastian, Spain

Filed Jun. 25, 1987, Ser. No. 66,855
Claims priority, application Spain, Jun. 25, 1986, 295.257[U]
Int. Cl.[4] H02G *1/12*
U.S. Cl. 81—9.4 **10 Claims**



1. Improved apparatus for stripping electric cables and the like, characterized by consisting of a main body bearing several cutting blades arranged substantially perpendicular to the body and protruding from several recesses formed by arcs of different radii in the body, corresponding supporting shapes extending from an arm articulated to said main body, the combination

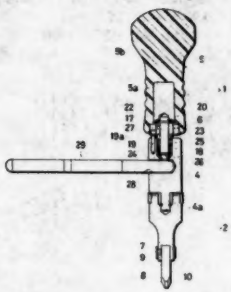
of the two permitting the lengthwise and crosswise stripping of cables, said articulated arm, at its end near the zone of articulation, defining a mounting zone for other knives which, corresponding to an opening in the main body, permit the final stripping of the inner conductors of the cable; said knives being capable of engaging a support of said main body provided with a suitable seat area to cut off said inner conductors.

4,799,407

RATCHET SCREWDRIVER

Yoshikazu Miyamoto, Higashiosaka, Japan, assignor to Rubicon Co., Ltd., Osaka, Japan

Filed Jul. 30, 1987, Ser. No. 79,533
Claims priority, application Japan, Aug. 26, 1986, 61-200343
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—58.3 5 Claims



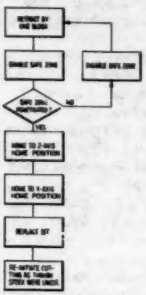
1. A ratchet screwdriver, comprising:
a bit attaching section;
an operating section body which is connected to said bit attaching section through a ratchet mechanism and capable of turning the bit attaching section around the axis of the bit only in one direction, said operating section body having a contact surface;
a handle section which is movably connected to said operating section body on the turning axis, said handle section having a contact surface;
locking means connecting said operating section body to said handle section, for locking the handle section to the operating section body under a normal state so as to turn the two sections together, the two sections being freely turnable in relation to each other keeping their connected state when said locking means is disengaged; and
an auxiliary handle which disengages the locking means, by being inserted from a side of the operating section body thereinto, wherein:
said locking means comprises an operating pin which is disposed on a turning axis with its one end held in the handle section so as to be axially stationary while its other end is held in the operating section body so as to be axially movable, urging means which gives impetus to the handle section so as to contact the operating section body, and engaging means which engages the handle section with the operating section body on their contact surfaces so as not to be rotatable in relation to each other when they are in contact with each other by said urging means;
said handle section moving said operating pin against the impetus of the urging means when an auxiliary handle is inserted into said operating section body, and said handle section being disengaged from the operating section body according to movement of the operating pin; and
said auxiliary handle is inserted into an auxiliary handle receiving hole provided laterally on the operating section body so as to push a top end of the operating pin projecting into the auxiliary handle receiving hole and move the operating pin against the impetus of the urging means.

4,799,408

AUTOMATIC CUTTING BIT RECOVERY

Larisa A. Elman, Marblehead, Mass., assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 703,954, Feb. 21, 1985, abandoned.
This application Aug. 18, 1986, Ser. No. 896,586
Int. Cl.[4] B23B *3/00*
U.S. Cl. 82—1 C 10 Claims



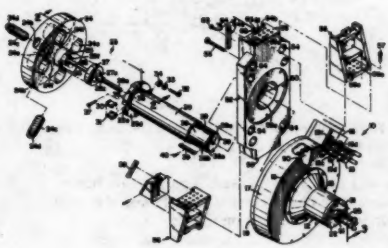
1. A method of positioning a cutting bit at a tool change position in a machining apparatus which drives the cutting bit along a first path in a first direction to machine a workpiece, comprising the steps of:
retracting the cutting bit along the first path in a second direction opposite the first direction;
determining whether the cutting bit has reached a predetermined safe zone boundary as the cutting bit is being retracted; and
moving the cutting bit to the tool change position along a second path different from the first path when the tool has reached the safe zone boundary.

4,799,409

PORTABLE END PREPARATION APPARATUS

Donato L. Ricci, 834 Spring Creek Rd., Red Wing, Minn. 55066

Filed Dec. 29, 1987, Ser. No. 139,194
Int. Cl.[4] B23B *3/22*
U.S. Cl. 82—4 C 3 Claims



1. A portable pipe end preparation apparatus comprising:
(a) a housing having a motor access opening and a central bore;
(b) a motor cooperatively connected to said housing, said motor having a pinion gear for imparting a driving force;
(c) a stationary mandrel assembly is positioned in said central bore, said mandrel assembly having a mandrel section and

a base plate and said base plate having means to secure said base plate to an inner diameter of a pipe;

(d) a rotating drive member rotatably mounted on said mandrel section, said drive member comprising:

(i) a bull gear positioned to engage said pinion gear, said bull gear circuling said mandrel section;

(ii) a base member cooperatively connected to said bull gear;

(iii) first bearings means positioned between said mandrel section and said base member;

(iv) a head member releasably and cooperatively connected to said base member;

(v) second bearing means positioned between said drive member and said housing; and

(e) a tool module releasably mounted to said head member; and

(f) said mandrel assembly comprising:

(i) a base plate having a bore formed therein;

(ii) a spherical member having a central bore and positioned on said base plate;

(iii) a cylindrical shaft positioned in said bore of said base plate, said shaft having a bore;

(iv) a cylindrical sleeve mounted for rotation on said spherical member;

(v) a rod having a first end and an enlarged section end, said rod positioned in said bore of said cylindrical shaft, said enlarged end preventing said rod from exiting said bore of said cylindrical shaft;

(vi) a mandrel section having a flange and said flange connected to said base plate, said flange of said mandrel section having an inner opening which is positioned on said cylindrical sleeve, whereby tilting of said sleeve results in tilting of said mandrel section.

4,799,410

REVOLVING TURRET PARTICULARLY FOR LATHE MACHINING CENTERS

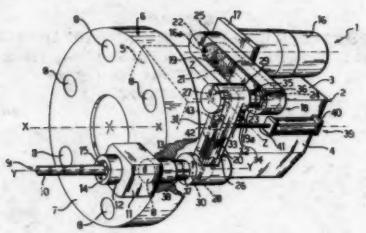
Franco De Bernardi, Busto Arsizio, Italy, assignor to Duplomatic S.p.A., Italy

Filed Sep. 10, 1986, Ser. No. 905,395

Claims priority, application Italy, Sep. 13, 1985, 22152 A/85

Int. Cl.[4] B23B *29/00*

U.S. Cl. 82—36 A **2 Claims**



1. A revolving turret particularly for lathe machining centers, of a type which comprises:

a base body;

a tool head carried rotatably on the base body;

at least one chuck carried rotatably on the head;

a drive motor carried on the base body;

a drive train between the motor and chuck; and

clutch means at the end of said drive train for engagement with mating clutch means carried on said chuck;

characterized in that at least one element of said drive train, including at one end said clutch means, and at the opposite end, clutch means for engagement with mating clutch means carried on the remaining elements of the drive train, is mounted, in a hide-away shiftable fashion, as an arm hinged to the base body and being shiftable angularly about the hinge axis under the action of control means from a first or operative position where the clutch means and mating clutch means are engaged, to a second or inoperative position where the clutch means and mating clutch means are disengaged, the clutch means disengaging themselves from their corresponding mating clutch means during the arm movement, said arm extends parallel to the head axis of rotation when in its inoperative position.

4,799,411

RELATING TO THE REPETITIVE CUTTING OF WORKPIECE BLANKS

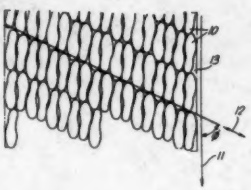
Roy P. Peake, Northants, England, assignor to Cox & Wright Limited, Rushden, England

Continuation of Ser. No. 774,356, Sep. 10, 1985, abandoned. This application May 7, 1987, Ser. No. 47,585

Claims priority, application United Kingdom, Sep. 11, 1984, 8422938; Oct. 16, 1984, 8426116

Int. Cl.[4] B26D *3/00*

U.S. Cl. 83—50 **10 Claims**



1. A method of repetitive cutting of large numbers of identical workpiece shapes from wide sheet or roll material by means of a travelling head press, the method comprising the steps of:

(i) providing a combination of a travelling head press and sheet material feeding means that is arranged for the cutting of rows of workpiece shapes from the sheet material at a variable bias angle and which is adjustable to change the bias angle without reorientation of the press base,

(ii) selecting and fitting to the press, a particular cutting tool for the stepwise cutting of a succession of desired workpiece shapes in a row across the entire width of the material,

(iii) computing the best bias angle for the particular workpiece shapes to be cut by the cutting tool selected,

(iv) adjusting the relative movements of the press and sheet feeding means such that the tool is moved along a fixed straight line at said bias angle relative to the sheet, and

(v) cutting an entire row of workpiece shapes along said fixed straight line at said bias angle relative to said sheet material.

4,799,412

METHOD FOR SEVERING THE ENDS OF TUBING

Randall L. Alexoff, Youngstown, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio

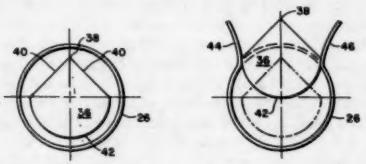
Filed Oct. 14, 1986, Ser. No. 918,143

Int. Cl.[4] B23D *21/14*

U.S. Cl. 83—54 **8 Claims**

1. A method for severing the ends of tubing comprising feeding the end of a tube through a die such that the end of the tube to be sheared extends beyond the die, pressing a shear blade with a pointed end in the interior of said end of a tube, causing relative vertical movement between said shear blade and said tube to cause said pointed end to initially puncture and extend exteriorly of the tube wall adjacent said die, and thereafter shifting said shear blade from the puncture site about a

tube wall shearing path generally tranverse to the length of the tube by laterally moving the shear blade from the puncture site



and then vertically moving the shear blade to shear a remaining portion of the tube wall.

4,799,413

CUTTING ARRANGEMENT FOR INTERMITTENT CUTTING OF WEB MATERIAL

Ulf Soderqvist, Göteborg, Sweden, assignor to Roy Soderqvist Mekaniska Verkstad AB, Sweden

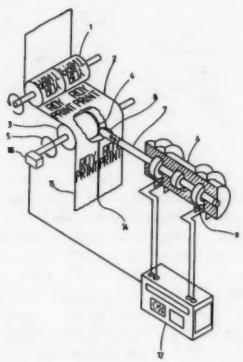
PCT No. PCT/SE86/00464, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02296, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 9, 1986, Ser. No. 68,269

Claims priority, application Sweden, Oct. 21, 1985, 8504925-2

Int. Cl.[4] B26D *5/26*

U.S. Cl. 83—71 **1 Claim**



1. A cutting device for cutting an elongated moving web of material, such as a paper web, the web of material moving in the longitudinal direction thereof, the device resting on a support means, such as a floor and comprising

a motor driven cylinder provided with a peripheral groove extending around the cylinder, said moving paper web being directed to run over the cylinder;

a power device comprising a plurality of fixed electromagnetic coils of toroidal form, an arm made of magnetizable material extending through said coils, said arm extending horizontally with respect to the support means and having at one end a blade-like cutting member located directly in front of said groove on the cylinder and being nonrotationally fixed in a predetermined horizontal location with respect to the movement of the web;

an angular pulse generator located at the cylinder axis to measure certain angular positions during the rotation of the cylinder; and

a control unit connected to the angular pulse generator to determine the angular positions of the cylinder and actuate the power device to move the arm intermittently, linearly in a horizontal plane with respect to the support means between a first retracted position having said cutting edge spaced from the paper web and a second extended position in which the cutting member has its edge lying in the groove and engaged against the paper web for a predetermined portion of the angular rotation of that cylinder to permit the paper to move with respect to said cutting member so that cutting member cuts through the paper web for a predetermined longitudinal distance of the web to define an elongated cut extending longitudinally in the paper web and divide that paper web into at least two elongated tabloids which extend along the longitudinal direction of the web and which are separated from each other.

4,799,414

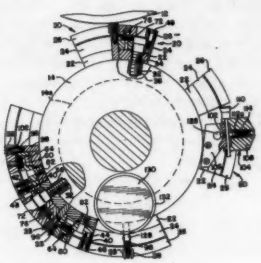
ROTARY CUTTER APPARATUS

Bruce A. Scheffer, Valparaiso, and Eric K. Lo, Portage, both of Ind., assignors to Scheffer, Inc., Merrillville, Ind.

Filed Nov. 16, 1987, Ser. No. 121,319

Int. Cl.[4] B26D *1/62*

U.S. Cl. 83—103 **21 Claims**



1. A cutter assembly for use in a rotary web cutter apparatus or the like having rotatable anvil and knife cylinders defining a nip therebetween through which web material passes during generally transverse cutting thereof, said cutter assembly comprising a first block member adapted to be mounted on the periphery of a knife cylinder for rotation through the nip between the knife cylinder and an anvil cylinder, a second block member supporting an elongated knife blade thereon and being mounted on said first block member for pivotal movement about a pivot axis parallel to and spaced from said knife blade, and means cooperative with said first and second block members to bias said second block member about said pivot axis away from said first block member but enabling pivotal movement of said second block member toward said first block member when said cutter assembly is mounted on a knife cylinder and said knife blade engages an associated anvil cylinder during a web cutting operation.

4,799,415

SUPPORT FOR STOCK IN A CUTTER

Erwin Gerdes, Edewecht/Portsloge, Fed. Rep. of Germany, assignor to MBB GmbH, Bremen, Fed. Rep. of Germany

Filed Sep. 9, 1986, Ser. No. 905,704

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1985, 3534096

Int. Cl.[4] B26F *3/00*

U.S. Cl. 83—177 **6 Claims**

1. In an apparatus for cutting flat stock such as foil, strip, fiber-reinforced ribbons, or the like, a support structure for the stock to be cut comprising:

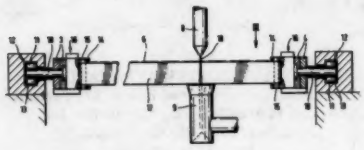
two endless chains running parallel to each other;

means for maintaining said chains at a predetermined distance from each other;

said chains having chain link members, each member being provided with at least one holding element;

a plurality of pins uniformly distributed on the holding elements; and

a plurality of thin flexible elongated elements such as strips or wires, each of the elements looping around a plurality of said pins and extending from a holding element on a chain link member of one of the chains, to a holding element on a chain link member of the other chain and back to a further holding element on the member of the one



chain, thereby spanning a distance between the two chains, said all elements together establishing a support surface for flat stock, the element strips or wires oriented so that respective thinnest dimensions face a cutting tool.

6. The support as in claim 1, in combination with a high pressure cutting nozzle, and a capturing container underneath, said capturing container being maintained in a fixed position relative to the cutting nozzle, the nozzle in the capturing container being respectively placed above and below the upper stringer of the chains.

4,799,416

GUARD-MOVING SYSTEM IN A CUTTING APPARATUS

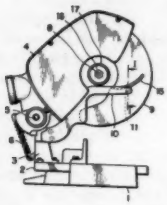
Taiichi Kumasaka; Yasuyuki Hirano; Katsuhiko Ozaki, and Koichi Sawada, all of Katsuta, Japan, assignors to Hitachi Koki Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 176,340

Claims priority, application Japan, Apr. 3, 1987, 62-83450

Int. Cl.[4] B23D *45/04;* B27B *5/20*

U.S. Cl. 83—397 **3 Claims**



1. A cutting apparatus comprising:

working table means fixedly secured to a base;

cutter means is pivotally coupled through a first shaft to said working table means so as to be swingable about said first shaft between its raised resting position and its lowered cutting position cutting a work piece placed on said working table means, said cutter means including a motor-driven circular saw-blade fixedly mounted on a second shaft which is coupled to a drive shaft of a drive motor, a blade housing for partially encasing an upper side portion of said circular saw-blade and supporting said second shaft so that said circular saw-blade is rotatable about said second shaft in response to operation of said drive motor, and a movable blade guard disposed to be rotatable about said second shaft to expose and cover a portion of said circular saw-blade, said movable blade guard being biased by means of spring means in a direction to cover said portion of said circular saw-blade and having an engaging device at a portion of the outer surface thereof; and

an elongated arm member one end portion of which is fixedly secured to a stationary portion of said cutting apparatus and the other end portion of which is positioned near said engaging device provided on said movable blade guard, said elongated arm member having at the other end portion a third shaft which is engaged with said engaging device of said movable blade guard so that said movable blade guard is rotated about said second shaft in response to a swinging movement of said cutter means about said first shaft to expose a portion of said saw-blade when said cutter means is moving to the cutting position and to cover the portion thereof when moving to the resting position.

4,799,417

BRAIDED LINE

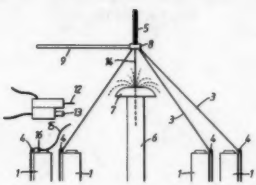
Paul D. Burgess, Hereford, Great Britain, assignor to Fly Fishing Technology Limited, Powys, Wales

Filed Jun. 29, 1987, Ser. No. 67,284

Claims priority, application United Kingdom, Jun. 28, 1986, 8615847

Int. Cl.[4] D04C *3/06, 1/12*

U.S. Cl. 87—11 **11 Claims**



1. Apparatus for tapering braided lines comprising a braiding machine of the carousel type in which filaments converge from an annular array of bobbins on the carousel to a common braid point co-axial with the array, and in which opposed interweaving motion of the bobbins causes the filaments to form a braided line leading from the braid point, and including means for severing a filament between a bobbin and the braid point and means for directing air flow in the vicinity of the braid point generally co-axially of the array and away from the braid point so as to encase the severed portion leading from the braid point within the intertwined remaining filaments.

4,799,418

VACUUM ACTUATOR FOR VEHICLE SPEED CONTROL

Yoshikazu Takahashi, and Toshio Nishiyama, both of Kiryu, Japan, assignors to Mitsuba Electric Mfg. Co., Ltd., Gunma, Japan

Filed Aug. 21, 1987, Ser. No. 87,704

Int. Cl.[4] F15B *11/08*

U.S. Cl. 91—449 **4 Claims**

1. A pressure actuator comprising:

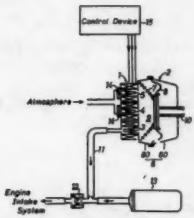
a solenoid valve unit incluidng a plurality of solenoid valves;

a diaphragm unit including a diaphragm defining a pressure chamber, air pressure within the pressure chamber being adjusted by selective activation of the solenoid valves which provide communication between the pressure chamber and pressure sources of different pressure levels;

a casing of the actuator defining an accommodating chamber for accommodating the solenoid valve unit, a wall surface of the accommodating chamber being provided with a rib for guiding and positioning the solenoid valve unit inside the accommodating chamber, the rib being disposed in a bottom wall of the accommodating chamber and adapted

to be fitted into a gap between a pair of adjacent yokes of the solenoid valves; and

a port member provided in the front end of said solenoid valve unit, said port member adapted to be fitted into a hole provided in the bottom wall of the accommodating



chamber of said casing, said hole provided with seal means to effect a seal between said port member and the hole, the fitting of said port member with the hole being facilitated by providing a tapering surface on at least a cooperating surface of said port member or the hole.

4,799,419

MULTI-CYLINDER HYDRAULIC PISTON DEVICE, A CYLINDER THEREFOR, AND ITS METHOD OF MAKING

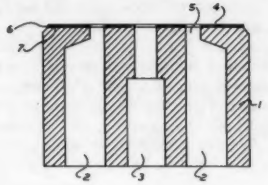
Bernd Krause, Mainaschaff, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Mainaschaff, Fed. Rep. of Germany

Continuation of Ser. No. 294,514, Aug. 20, 1981, abandoned, which is a continuation of Ser. No. 22,839, Mar. 22, 1979, abandoned. This application Nov. 9, 1983, Ser. No. 549,974

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812417

Int. Cl.[4] F01B *3/00*

U.S. Cl. 91—499 **8 Claims**



1. A process for producing a cylinder block for a multi-cylinder hydraulic axial piston device comprising the steps of forming a generally cylindrical steel cylinder block having a plurality of cylinder bores in said cylinder block each having an axis parallel to the axis of the cylinder block and opening into an end surface of the cylinder block transverse to the axis of the cylinder block and adapted to rotate in frictional contact with a valving surface, finishing the cylinder block to its final shape, electroplating a metal layer upon said end surface of said cylinder block and sintering an anti-friction metal layer onto said electrodeposited layer by simultaneously heating the metal material to a sintering temperature and applying pressure to said anti-friction metal material while sintering, said electrodepositd layer having a crystal lattice constant compatible with said sintered layer and the material of said cylinder block, and chemically treating said cylinder block by gas nitriding at a low temperature such that the tempering properties and the steel are not effected to form an in situ integral surface layer improving the wear characteristics of said cylinder block without reducing the sliding friction properties of said sintered layer.

4,799,420

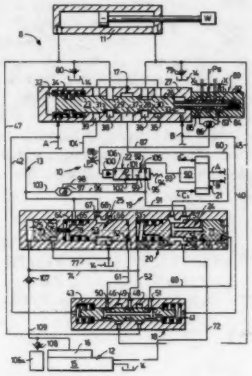
LOAD RESPONSIVE CONTROL SYSTEM ADAPTED TO USE OF NEGATIVE LOAD PRESSURE IN OPERATION OF SYSTEM CONTROLS

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 27, 1987, Ser. No. 89,878

Int. Cl.[4] F15B *13/08*

U.S. Cl. 91—529 **15 Claims**



1. A load responsive control system comprising at least one actuator operable to control a positive and a negative load, exhaust means and a source of pressure fluid, first valve means operable to selectively interconnect said actuator with said exhaust means and said source of pressure fluid and to control fluid flow to and from said actuator, control means operable to provide energy to control the position of the first valve means to control fluid flow to and from said actuator, said control means having first energizing means operable to use energy from said source of pressure fluid to control the first valve means while said actuator controls a positive load, and second energizing means operable to use energy from said negative load to control the first valve means while said actuator controls a negative load.

4,799,421

HYDRODYNAMIC SPIRAL-GROOVED JOURNAL BEARING FOR ELECTROMAGNETICALLY ROTATED AND RECIPROCATED COMPRESSOR PISTON

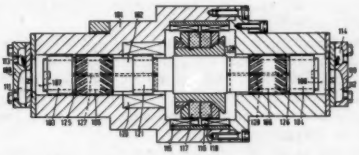
Fridtjof Bremer, and Everhardus Muijderman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1986, Ser. No. 928,063

Claims priority, application Netherlands, Nov. 6, 1985, 8503037

Int. Cl.[4] F16C *31/00, 32/06*

U.S. Cl. 92—162 R **20 Claims**



1. An apparatus comprising a smooth walled circular cylinder and a piston having a pair of end faces that is reciprocable and rotatable in said cylinder and in which a working fluid is

provided in said cylinder for being worked on by said piston during piston reciprocation or for working on said piston to reciprocate said piston in said cylinder, a fluid pressure difference existing across said piston during piston reciprocation which acts on said end faces,

the improvement comprising:

means for rotating said piston in said cylinder while said piston is reciprocating; and

said piston comprising a bearing part having a pattern of grooves which cooperate with said cylinder wall and said fluid to dynamically support and center said piston in said cylinder for rotating and reciprocating piston movement, and a sealing part for reducing the pressure difference across said bearing part comprising a smooth circular cylindrical surface defining a gap between said sealing surface and said cylinder wall, the length of said surface and the size of said gap being chosen so that the pressure difference across said bearing surface is reduced to a level such that said piston is free of radial dynamic instability and remains stable in said cylinder during piston reciprocation and rotation.

4,799,422

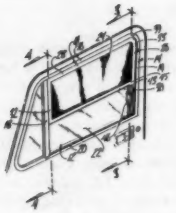
MOTOR VEHICLE WINDOW VENTILATOR

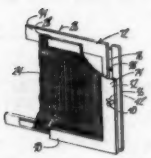
Robert M. Birt, 1308 Washington Ave., Ruthven, Iowa 51358

Filed Dec. 28, 1987, Ser. No. 138,554

Int. Cl.[4] B60H *1/26*

U.S. Cl. 98—2.13 **9 Claims**





7. A device for ventilating vehicles having windows which can be moved up or down within a window framework, said framework including channels to receive the edges of the window, comprising:

a ventilator frame having an outer perimeter closely conforming to the inside perimeter of the window framework;

a screen means secured in the ventilator frame for allowing air to pass;

flange means on at least a portion of the outer perimeter of the ventilator frame for matable insertion into corresponding portions of the channels of the window framework;

channel means on at least a portion of the outer perimeter of the ventilator frame for matable reception of the top edge of the window;

fitting means mounted by a spring on a portion of the perimeter of the frame, for matable insertion into a corresponding channel of the framework, said fitting means resiliently held by said spring and movable from a normal extended position away from the frame, to a retracted position adjacent the frame, said portion of said frame on which said fitting means is mounted having a portion extending laterally outwardly to cover said spring and a portion of said fitting means to allow insertion of the frame into the window framework, and the extension to completely cover the window opening.

4,799,423

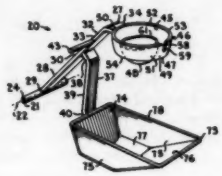
EGG CONTENTS SEPARATING MECHANISM

Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Jan. 19, 1988, Ser. No. 145,100

Int. Cl.[4] A23J *1/09*

U.S. Cl. 99—500 **22 Claims**



1. A mechanism for separating egg yolk and albumen contents, which comprises:

(a) a frame;

(b) a yolk cup assembly mounted on said frame and including:

(1) an annular funnel ring with upper and lower openings, said funnel ring including a lower rim defining said lower opening and lying in a plane;

(2) a concave retaining bowl mounted on said funnel ring and adapted to receive said yolk, said retaining bowl including a rim lying in a plane that slopes with respect to said funnel ring lower rim plane;

(3) said retaining bowl being positioned partly within said funnel ring lower opening; and

(4) said funnel ring and said retaining bowl defining a receptacle and being in partlyspaced relation whereby an opening to said receptacle is defined; and

(c) an albumen pan mounted on said frame in spaced relation below said yolk cup assembly, said albumen pan being adapted to receive albumen from said yolk cup assembly.

4,799,424

FLUID SEAL FOR MOVING BELTS

Gerhard Stübler, Murr, Fed. Rep. of Germany, assignor to Santrade Ltd., Luzern, Switzerland

Filed Sep. 29, 1987, Ser. No. 102,530

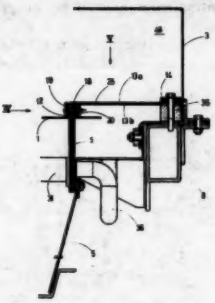
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634274

Int. Cl.[4] F16J *15/16*; B30B *5/06*; B65G *15/60*; B08B *15/02*

U.S. Cl. 100—154 **21 Claims**

1. A sealing assembly for use in forming a fluid-tight seal against a moving belt, said sealing assembly comprising a plurality of spring plate means disposed in side-by-side relationship to form a row, each said spring plate means being anchored at one end and freely elastically movable at an opposite free end thereof, said free ends being movable relative to one another, an elongate flexible profile element extending generally parallel to said row and mounted on said free ends such that each said free end is mounted to a portion of said profile element, said profile element adapted to bear against a surface of a belt and flex as said free ends move relative to one another to conform to the configuration of that surface while maintaining a seal therewith, and an elongate strip extending

generally parallel to said row and carried by said plurality of spring plate means at a location intermediate said profile element and said anchored ends in order to create a seal between adjacent ones of said spring plate means.



4,799,425

BOARD PRESS

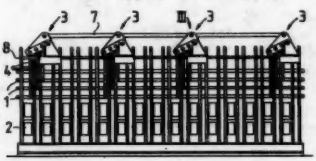
Johan J. K. Hotma, Valko, Finland, assignor to Rauma-Repola Oy, Finland

Filed Sep. 26, 1986, Ser. No. 912,007

Claims priority, application Finland, Oct. 23, 1985, 854152

Int. Cl.[4] B30B 7/02

U.S. Cl. 100—194 **2 Claims**



1. A board press comprising a plurality of press plates disposed one above the other, pressure cylinders operatively associated with said press plates for pressing said press plates together for pressing boards, and a single simultaneous apparatus interconnecting said press plates to maintain equal distances between the press plates during movement of the press plates, said single simultaneous apparatus comprising a plurality of pairs of lever units located at a plurality of points on both longitudinal margins of the press plates, each lever unit pair comprising a first lever arm pivotally mounted so that it is located at one of the longitudinal margins of said press plates and a second lever arm pivotally mounted so that it is located at the other longitudinal margin of said press plates, a rod pivotally connected to each press plate at said one longitudinal margin thereof and to said first lever arm, a rod pivotally connected to each press plate at said other longitudinal margin thereof and to said second lever arm, a transversal turning shaft common to said first and second lever arms, and longitudinal control rods disposed along said one and other longitudinal margins of said press plates, said first and second lever arms being respectively connected with a respective control rod, whereby said lever unit pairs are interconnected to constitute a single simultaneous apparatus.

4,799,426

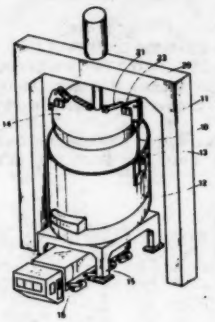
SYSTEM AND METHOD FOR MOVING SKIPS AND PRESSING SCRAP IN A SKIP

Nosini Geremia, Buttrio, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Aug. 6, 1987, Ser. No. 82,319

Int. Cl.[4] B30B *15/32, 9/32*

U.S. Cl. 100—218 **8 Claims**



1. A system for pressing scrap in a skip, comprising

a skip for holding scrap to be pressed, comprising support pins;

a support with legs for supporting the skip;

a press for pressing scrap within the skip, said press comprising hooks for engaging the support pins of the skip to support the skip;

a vehicle comprising a vertically moveable platform, for transporting the support with legs and skip to and away from the press; and

a cradle for supporting the skip during pressing of scrap, wherein the support with legs is replaced by the cradle when the skip is supported by said hooks.

4,799,427

PROJECTILE IGNITION DEVICE

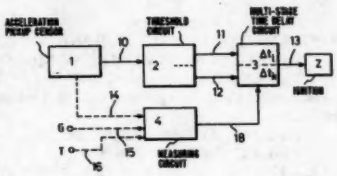
Manfred Held, Aresing, and Horst Kirsche, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1988, Ser. No. 152,079

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1987, 3711698

Int. Cl.[4] F42C *11/06*

U.S. Cl. 102—215 **8 Claims**



1. An ignition device for a projectile penetrating into a target having electronic ignition delay means adjustable in accordance with sensor signals comprising:

threshold circuit means having an input coupled to receive an output signal from an acceleration sensor;

said threshold circuit means generating output signals which occur, depending on the amplitude of the output signal from the acceleration sensor, when a signal threshold is

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fallen short of or exceeded, and which activate a time delay circuit means generating a time delay having at least two delay ranges;

said time delay circuit means having an output signal which triggers the ignition of an active charge in the projectile, the mean duration of the delay time being short for high output signals from the acceleration sensor and longer for low output signals from the acceleration sensor.

4,799,428

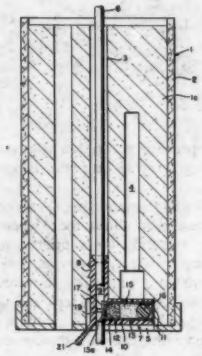
EXPLOSIVE PRIMER UNIT FOR INSTANTANEOUS INITIATION BY LOW-ENERGY DETONATING CORD

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to Explosives Technologies International Inc., Wilmington, Del.

Filed Apr. 6, 1987, Ser. No. 35,004

Int. Cl.[4] C06C *5/04*; F42B *3/10*; F42D *1/08*

U.S. Cl. 102—322 **18 Claims**



14. An explosive coupler for arming a high-energy explosive primer to adapt it to be initiated instantaneously by low-energy detonating cord (LEDC), said coupler comprising:

(a) a plastic connecting block housing a coupling charge of granular detonating explosive in linear array in a sealed bore therein, said coupling charge being a high-velocity explosive adapted to initiate said primer along one or more of its surfaces, and said coupling charge also being shock-sensitive at least in an end segment of said linear array; and

(b) a pull-tab appendage on the exterior surface of said connecting block.

4,799,429

PROGRAMMING CIRCUIT FOR INDIVIDUAL BOMBLETS IN A CLUSTER BOMB

Edward V. LaBudde, Newbury Park, and Robert L. Kay, Calabasas, both of Calif., assignors to ISC Technologies, Inc., Lancaster, Pa.

Filed Mar. 30, 1984, Ser. No. 595,256

Int. Cl.[4] F42B *25/16*; F42C *11/06*

U.S. Cl. 102—393 **21 Claims**

1. In a cluster bomblet having a detonating mechanism and a transformer secondary winding for receiving bomblet address and detonation delay signals from a primary winding which is external to the bomblet and is pulled away when the bomblet is released, the improvement comprising a detonator control circuit which comprises:

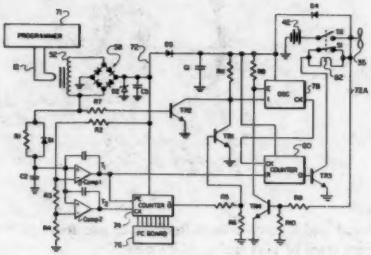
an address storage means having an adjustable bomblet address stored therein,

a programmable timing means connected to actuate the detonating mechanism after a programmed time delay,

a signal discriminator circuit connected to recognize bomblet address signals at the secondary winding,

means connecting the secondary winding to the timing means to transmit a detonator delay program signal to the timing means,

means connecting the discriminator circuit to the address storage means to adjust the address stored therein in response to the discriminator circuit receiving a bomblet address signal, and



an enabling circuit connected to enable programming of the timing means by a detonation delay signal in response to the address stored in the address storage means being adjusted to a predetermined address, and to disable programming of the timing means at other times.

4,799,430

MOBILE BALLAST CLEANING APPARATUS

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 12, 1987, Ser. No. 13,709

Claims priority, application European Pat. Off., Apr. 2, 1986, 86890086.1

Int. Cl.[4] E01B *27/00*

U.S. Cl. 104—2 **11 Claims**

1. A mobile ballast cleaning apparatus mounted for mobility in an operating direction on a track supported on ballast, which comprises

(a) a first work vehicle having a front undercarriage and a rear undercarriage mounting the vehicle on the track

(1) a track lifting device mounted on the first work vehicle between the undercarriages, and

(2) a vertically adjustable ballast excavating and conveying chain mounted on the first work vehicle at a ballast excavating site between the undercarriage adjacent the track lifting device,

(b) a second work vehicle preceding the first work vehicle in the operating direction and having a front undercarriage and a rear undercarriage mounting the vehicle on the track,

(1) a ballast screening installation mounted substantially centrally on the second work vehicle for separating waste from cleaned ballast, and

(2) a waste conveyor means mounted on the second work vehicle for removing the waste,

(c) a conveyor means for conveying the excavated ballast from the ballast excavating and conveying chain to the ballast screening installation,

(d) a cleaned ballast conveying and redistributing installation

including a conveyor band mounted on the second work vehicle for receiving the cleaned ballast from the ballast screening installation, a first cleaned ballast conveying and redistributing means arranged to convey the cleaned ballast to an output end adjacent a first ballast redistributing outlet immediately rearwardly of the ballast excavating site, a second cleaned ballast conveying and redistributing means having an input end adjacent the output end of the first ballast conveying and redistributing means and leading to a second ballast redistributing outlet arranged rearwardly of the rear undercarriage of the first work vehicle, and a third cleaned ballast conveying and redistribution means arranged to convey any excess cleaned ballast to a predetermined distribution outlet,

(e) a ballast flow deflector mounted between the output end of the first cleaned ballast conveying and redistributing means and the input end of the second cleaned ballast conveying and redistributing means, and

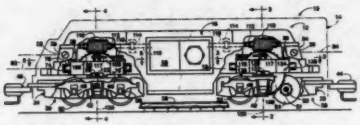
(f) a drive for selectively positioning the ballast flow deflector for directing the cleaned ballast solely to the first outlet for continuously forming a first layer of cleaned ballast as the mobile apparatus advances in the operating direction, solely to the second outlet for forming a second layer of cleaned ballast over the first layer, and into both outlets for simultaneously forming the first and second layers of cleaned ballast.

4,799,431

MODEL LOCOMOTIVE TRUCK MOUNTING MECHANISM

Clarence K. Edwards, Medford, and Lawrence D. Edwards, Eagle Point, both of Oreg., assignors to Kadee Metal Products Co., Medford, Oreg.

Filed Oct. 26, 1987, Ser. No. 112,938
Int. Cl.[4] B61D *17/00*
U.S. Cl. 105—1.5 **13 Claims**



10. In a model railroad locomotive for self-propelled movement over a pair of electrically conductive, spaced apart rails, the locomotive having an elongate chassis, and motor means, an improved truck mounting mechanism comprising:

at least two truck frames having wheel-bearing axles carried thereon;

first truck frame mounting means for providing two-axis movement of one truck frame relative to the chassis; and

second truck frame mounting means for providing three-axis movement of another truck frame relative to the chassis, including a gimbal mount secured to the chassis for movement about a roll axis, said roll axis being parallel to the longitudinal axis of the chassis, and a gimbal body fixed to the second truck frame, said gimbal body having articulation means thereon and said gimbal mount having receiver means for receiving said articulation means, said articulation means and receiver means being constructed and arranged to provide pitch and yaw movement of said gimbal body relative to said gimbal mount.

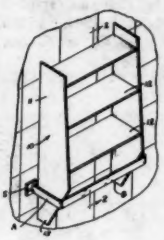
4,799,432

AUXILIARY TOWEL RACK SHELVES

Thomas W. Rickner, 1107 Shamrock Dr., Dublin, Ga. 32121

Filed Jun. 4, 1984, Ser. No. 617,191
Int. Cl.[4] A47B *23/00*
U.S. Cl. 211—105.1 **6 Claims**

1. A shelf assembly for use with and supportable within a wall mounted towel rack, said rack having spaced horizontal arms mounted on and extending outwardly from the wall and a bar extending between the arms and spaced outwardly from said wall, said shelf assembly comprising parallel side members providing an upper shelf supporting portion which is generally wider than the space between the bar and the wall, and a lower leg portion, the lower part of which is narrower than the space between the bar and the wall, received between the rack and the wall, one or more vertically spaced shelves extending between the side members of the upper shelf supporting portion, the lower leg portion of each side member having a rear edge portion abutting the wall below the horizontal plane of the bar when the assembly is received within the rack, the side members at the upper region of each leg portion having a front edge portion extending outwardly from the plane of said rear edge portion and said wall into engagement with said bar, whereby the assembly may be lowered into the towel rack until the front edge portion engages the bar and the rear edge portion engages the wall, thereby securing the assembly within said rack.

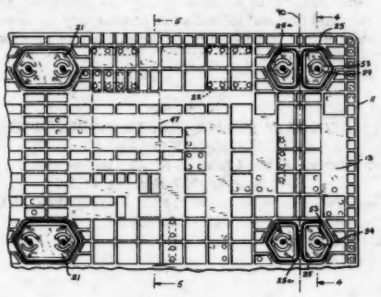


4,799,433

LARGE CAPACITY SHIPPING PALLET ASSEMBLY

Lee T. Luft, Waukesha, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Feb. 6, 1987, Ser. No. 12,147
Int. Cl.[4] B65D *19/00*
U.S. Cl. 108—51.1 **19 Claims**



1. A pallet assembly comprising a pallet deck having a generally planar deck surface and projecting pedestals that flank and define a portion of a forklift channel, wherein:

the pedestals comprise a pair of complete foot members comprising sidewalls extending downwardly from said deck surface and a bottom wall defining an end of said foot member interconnecting the sidewalls, each foot member attached at one of its sidewalls to a sidewall of another foot member and having interengaging means on said ends of said foot members opposite said deck surface for engagement in one instance with foot members of an

indentical pallet deck and in another instance with a separate foot member to flank and define in both instances a forklift channel and

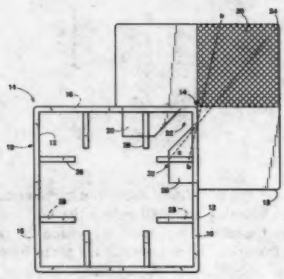
a cut-a-way portion extending through said attachment of said pair of foot members so that upon separation a smaller sized pallet deck results with a complete foot member.

4,799,434

OUTSIDE-CORNER SHELF ASSEMBLY

Gerald S. Moshofsky, Eugene, Oreg., assignor to Newood Products of Oregon, Inc., Eugene, Oreg.

Filed Jul. 2, 1987, Ser. No. 69,435
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—108 **12 Claims**



1. A shelf assembly comprising:

(a) a support structure having adjacent first and second substantially vertical wall members defining a substantially vertical outside corner;

(b) a substantially planar shelf member adapted to fit horizontally around said outside corner of said support structure;

(c) said first and second wall members respectively including first and second horizontal slots coplanar with each other; and

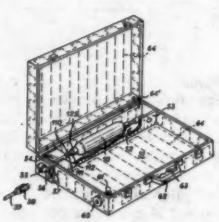
(d) said shelf member including first and second horizontally projecting tangs, coplanar with said shelf member, said tangs adapted to be substantially simultaneously inserted into said first and second slots, respectively, by movement of said shelf member along a horizontal axis bisecting said outside corner.

4,799,435

SECURITY DEVICE FOR TRANSPORTING DOCUMENTS OF VALUE

Marc Boutroy, 12 rue Corberie, 60110 Amblainville, France

Filed Mar. 4, 1987, Ser. No. 21,767
Claims priority, application France, Mar. 5, 1986, 86 03070
Int. Cl.[4] E05G *3/00*
U.S. Cl. 109—25 **38 Claims**



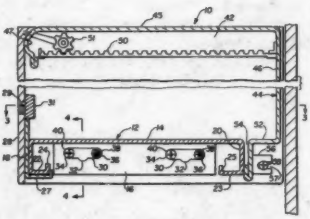
1. A security device for transporting documents of value such as bank notes, comprising an enclosure having a space for receiving the documents and housing a foam generating unit including a receptacle containing high wetting power marker liquid adapted to foam up and color documents, said receptacle having openable closure means, a reserve of compressed gas having means for releasing compressed gas, actuating means for controlling said means for releasing compressed gas, at least one movable wall disposed inside said receptacle between said marker liquid and said means for releasing compressed gas, a liquid/air mixing means connected downstream of said receptacle closure means for converting marker liquid into marker foam in response to compressed gas released from said reserve urging said movable wall to force liquid via said closure means to said liquid/air mixing means, and discharge means for carrying marker foam from said liquid/air mixing means to said space for marking said documents.

4,799,436

TAMPERPROOF CABINET

Steve F. Goodman, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 30,677, Mar. 26, 1987, Pat. No. 4,722,285, which is a continuation of Ser. No. 810,035, Dec. 17, 1985, abandoned. This application Dec. 4, 1987, Ser. No. 128,631
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] E05G *1/04*; F47C *43/00*
U.S. Cl. 109—50 **9 Claims**



1. A storage cabinet adapted for mounting on a wall and including side panels, a top panel, a bottom panel, a back panel, and a door for closing an opening between said top panel, bottom panel, and side panels, all of said panels and door being joined together to define an enclosed space, said bottom panel is removably joined to said side panels through exposed fasteners outside said enclosed space and extending through said bottom panel and side panels, the improvement which comprises:

a slot in one of said bottom panel and said side panels for retaining said exposed fasteners when said bottom panel is in a forward position with respect to said side panels;

one of said exposed fasteners mounted in an end portion of said slot to prevent forward movement of said bottom panel with respect to said side panel, said one fastener being secured to the other of said bottom panel and side panels in a non-removable fashion by which said one exposed fastener cannot ordinarily be removed without evident damage to said other of said bottom panel and side panels; and

means including a locking flange on said door to prevent movement of said bottom panel from said forward position to said rearward position when said cabinet is assembled, said locking flange being movable vertically between positions engaging and nonengaging with respect to said bottom panel to lock and unlock respectively said door in closed position covering said opening;

whereby said bottom panel can be removed from said side panels in the absence of said locking flange in said engag-

ing position by sliding said bottom panel rearwardly with respect to said side panels when all said fasteners except said one nonremovable fasteners are removed;

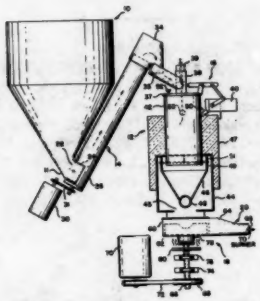
whereby said bottom panel cannot be removed from said side panels while said locking flange is in said engaging position without evident damage to the other of said bottom panel and said panels, thus preventing disassembly of said cabinet when said door is locked in said opening without evidence of tampering.

4,799,437

HEATING STOVE WHICH INCLUDES A PYROLYSIS GASIFIER

Frederick P. Beierle, Prosser, Wash.; Birdell T. Boyer, Mio, and Richard A. Suisse, Luzerne, both of Mich., assignors to Ablestien Industries, Inc., Prosser, Wash.

Division of Ser. No. 57,778, Jun. 3, 1987, Pat. No. 4,738,205.
This application Feb. 22, 1988, Ser. No. 159,113
Int. Cl.[4] F23G 5/12
U.S. Cl. 110—229 **4 Claims**



1. A blower apparatus for moving fuel gas produced by a gasifier into an exit pipe for transmission to a burner or the like and for simultaneously moving air through the gasifier, comprising:

housing means having an inlet for entry of fuel gas produced by a gasifier and an exit therefrom leading to a burner;

first fan means positioned in the housing for moving the fuel gas through the exit from the housing means and for drawing air through the gasifier;

a fan shaft upon which the first fan means is mounted, the fan shaft extending below said fan means and out of said housing, the fan shaft being hollow over a portion of its length, wherein the hollow portion is in communication with the environment;

means for rotating the fan shaft and hence the first fan means at high speed;

bearing means positioned so as to support said fan shaft; and

second fan means positioned on said fan shaft beneath the housing.

4,799,438

METHOD AND APPARATUS FOR CLAMPING AND MANIPULATING WORKPIECES DURING A SEWING OPERATION

John E. Hinckle, Richmond, Va., assignor to Apparel Machinery International, Ltd., Richmond, Va.

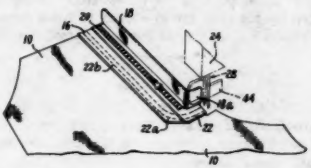
Filed May 28, 1987, Ser. No. 55,135
Int. Cl.[4] D05B 21/00, 3/12, 27/16
U.S. Cl. 112—121.12 **27 Claims**

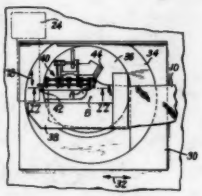
1. Apparatus for clamping and manipulating a plurality of clothing components relative to a sewing machine having reciprocating sewing needle means comprising:

(a) work table means operatively associated with the sewing machine;

(b) clamping means to hold the plurality of clothing components in a desired orientation on the work table means and;

(c) drive means operatively interconnected with the work table means to move the work table means with respect to the sewing machine means such that the plurality of clothing components are translated and rotated with respect to the reciprocating sewing needle means so as to attach the components together with a line of stitches, a portion of said line having at least a constant curved portion with a radius r .



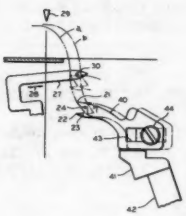


4,799,439

DOUBLE PURPOSE LOOPER FOR OVERLOCKING SEWING MACHINE

Osamu Koshinaka, and Yoshikazu Suzuki, both of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,079
Claims priority, application Japan, Jul. 14, 1981, 56-111569; Oct. 26, 1981, 56-161673[U]
Int. Cl.[4] D05B 1/20, 57/06, 1/10
U.S. Cl. 112—162 **13 Claims**



1. An improved looper for an overlocking sewing machine including a sewing needle and a lower looper, each capable of carrying a thread, said needle, lower looper and improved looper being cooperatively operable to produce overlocked stitches, comprising:

a looper having a unitary distal portion having an upper looper portion and a spreader portion, said unitary distal portion being operable with said needle and lower looper for the selective production of overlocked stitches with

one needle and three threads or one needle and two threads;

said looper including an aperture in said distal portion capable of supporting a thread for movement therewith;

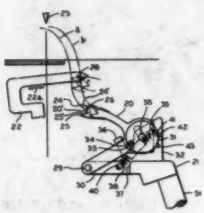
said upper looper of said unitary distal portion being operable to pick up the thread carried by said lower looper and to move a thread supported by said looper, with said unitary distal portion, in its aperture under the thread carried by the said lower looper to form an overlocked stitch with a third thread carried by said needle.

4,799,440

LOOPER CHANGEOVER DEVICE

Osamu Koshinaka; Yoshikazu Suzuki, and Yoshihide Yoneda, all of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,072
Claims priority, application Japan, Aug. 11, 1981, 56-126087
Int. Cl.[4] D05B *57/06*
U.S. Cl. 112—162 **7 Claims**



1. In a looper changeover device, for a sewing machine including a sewing needle, a lower looper, another looper, looper driving means, and holder means for securing said other looper to said driving means therefor, said needle, lower looper and other looper being cooperatively operable to produce overlocked stitches,

the improvement comprising manually operable, rotatable selector means for securing and selectively positioning said other looper with respect to said holder means between a first position wherein said looper is moved by said driving means therefor along a first path and a second position wherein said looper is moved by said driving means along a second path for the selective production of overlocked stitches with one needle and three threads or one needle and two threads,

said other looper having a distal portion having an upper looper portion and a spreader portion including a hook portion which are selectively movable along said first and second paths as determined by said selector means.

4,799,441

METHOD OF SEWING ELASTIC ABOUT A GARMENT OPENING

Ronald J. Boser, 711-3 Koehler Ave., Ronkonkoma, N.Y. 11779

Filed Jul. 5, 1988, Ser. No. 215,333
Int. Cl.[4] D05B *97/00*; A41D *1/06*
U.S. Cl. 112—262.2 **3 Claims**

1. A method of sewing a discreet elastic length having opposite leading and trailing ends about a garment waist opening comprising the steps of sewing cooperating sides of a pattern of said garment to form side seams for said garment effective to provide a closed upper garment edge bounding said waist opening, attaching by sewing the leading end of said elastic length at a selected location on said upper garment edge other than at the locations of said side seams and at a selected distance below said upper garment edge, continuing the attaching by sewing to said upper garment edge of a remaining elastic length except for a portion thereof which is at a selected distance short of the trailing end, shifting the unattached trailing end of said elastic length below said upper garment edge, and attaching by sewing the shifted said elastic trailing : end, whereby the elastic leading which might contribute to an

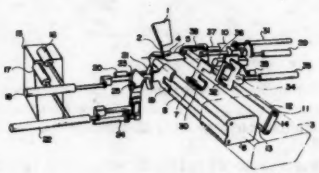
unsightly appearance are below said upper garment edge and the coinciding of the location of these ends with the location of the side seams which might contribute to bulk and discomfort is obviated.

4,799,442

METHOD OF AND APPARATUS FOR FEEDING FABRIC TO SEWING MACHINE

Toshio Nakatani, and Atsumi Ohshima, both of Aichi, Japan, assignors to Nakanihon Juki Co., Ltd., Nagoya, Japan

Division of Ser. No. 47,382, May 8, 1987, Pat. No. 4,760,809.
This application May 12, 1988, Ser. No. 193,056
Claims priority, application Japan, Jan. 7, 1987, 62-1386
Int. Cl.[4] D05B *21/00, 1/00*
U.S. Cl. 112—262.2 **5 Claims**



1. A method of feeding a piece of fabric to a sewing machine, comprising the steps of:

a. sewing one edge of a piece of flat-shaped fabric to the opposite edge thereof so as to make said piece of fabric into a cylindrical shape;

b. inserting the inner periphery of said cylindrical piece of fabric around a holder extending from a sewing portion of the sewing machine from the side of said holder that is away from said sewing portion forward to said sewing portion so as to support said cylindrical piece of fabric around said holder;

c. first clamping left and right portions of the longitudinally forward portion of said cylindrical piece of fabric which is closer to said sewing portion respectively from the inside and outside and subsequently stretching the thus first clamped portions of said cylindrical piece of fabric from the inside toward the outside, so that the thus stretched portions are slightly expanded in the left and right directions;

d. second clamping left and right portions of a longitudinally intermediate portion of the outer periphery of said cylindrical piece of fabric onto said holder from the outside;

e. moving said stretched portions of said piece of fabric in the stretched state toward the thus second clamped intermediate portions until said stretched portions are disposed over the outside of said second clamped intermediate portions, so that said cylindrical piece of fabric is folded

twice and the edge of said piece of fabric on the outermost side slightly projects longitudinally from the edge of an inner folded clamped portion of said piece of fabric;

f. first pressing left and right portions of the thus folded portion of said piece of fabric respectively from the inside and outside;

g. releasing the first clamping and then the stretching of said piece of fabric while said piece of fabric is being subjected to the first pressing;

h. moving the thus first pressed portion of said piece of fabric in the pressed state forwardly to said sewing portion in parallel with said holder;

i. second pressing an upper surface of said first pressed portion of said piece of fabric and a lateral portion of said first pressed portion of said piece of fabric onto said holder;

j. releasing the second clamping and then the first pressing of said folded portion of said piece of fabric; and

k. releasing the second pressing of said piece of fabric.

4,799,443

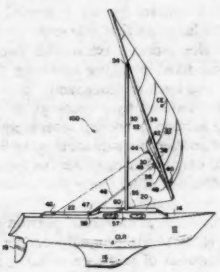
SWING SAIL BOAT

Ferdinand L. Vogel, Voorhees Rd.,RD 3, Whitehouse Station, N.J. 08889

Continuation of Ser. No. 743,752, Jun. 12, 1985, abandoned. This application Dec. 19, 1986, Ser. No. 942,936

Int. Cl.[4] B63H *9/06*

U.S. Cl. 114—39.1 **13 Claims**



1. A sailing vehicle including a hull structure having a fore and aft centerline; a mast having a lower end and an upper end, the lower end of the mast being stepped in the hull structure at the centerline such that the mast is maintained in substantially fixed upright relation with respect to the hull structure; and a sail having three corners constituting a head, a tack and a clew, an edge constituting a luff extending between the head and the tack, a foot extending between the tack and the clew, and a center of effort located approximately at the geometric center of the sail, wherein the improvement comprises:

means for supporting the sail including a luff boom having an upper end and a lower end, the head of the sail being attached to the luff boom near the upper end of the luff boom and the tack of the sail being attached to the luff boom near the lower end of the luff boom;

means for articulately connecting the luff boom to the mast so as to permit the luff boom to tilt with respect to the mast and to pivot at least partially around the mast, the connecting means being coupled to the mast adjacent to the upper end of the mast and being attached to the luff boom at a point above the center of effort of the sail;

means directly connecting the lower end of the luff boom to a fixed point with respect to the hull structure for controlling the tilt angle of the luff boom with respect to the mast in response to wind pressure on the sail and angle of heel of the mast with respect to a vertical position, said means for articulately connecting the luff boom to the mast and said means for controlling the tilt angle of the luff boom with respect to the mast being the only means respectively connecting the luff boom to the mast and directly to a point fixed with respect to the hull structure; and

means acting on the clew of the sail for controlling the angle of a line containing the clew and the tack of the sail with respect to a plane defined by the mast and the centerline of the hull.

4,799,444

RAIL CLAMP

Walter E. Lisowski, Chicago, Ill., assignor to Helm Products, Inc., Chicago, Ill.

Filed Oct. 1, 1987, Ser. No. 103,542

Int. Cl.[4] B63B *9/00*

U.S. Cl. 114—221 R **5 Claims**

1. A rail clamp comprising a pair of substantially identical opposing side members, each side member having

(a) a parallel slidably interlocking means at one end of the side member having a receiving means and a hooking means wherein the hooking means includes a hooking lip which forms a hooking channel and the receiving means includes a receiving lip which forms a receiving channel such that the hooking lip and hooking channel of the first side member slidably interlocks with the receiving channel and receiving lip, respecitvely, of the second side member to prevent the side members from pivoting about a rail,

(b) a holding means for mounting auxiliary devices to the clamp at the other end of the side member,

(c) a semicircular portion disposed between the ends and adapted to surround approximately one half of the rail between each of the side members when positioned against the rail, and

(d) a means for fastening the individual side members together when the pair of side members have the slidably interlocked means interlocked together with a rail positioned between the respective semicircular portions.

4,799,445

MODULAR FLOAT DRUM SYSTEM

Jon D. Meriwether, Follansbee, W. Va., assignor to Follansbee Steel Corporation, Follansbee, W. Va.

Filed Aug. 12, 1987, Ser. No. 84,159

Int. Cl.[4] B63B *35/00*

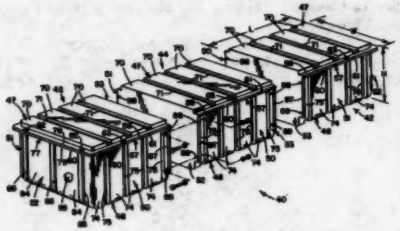
U.S. Cl. 114—267 **50 Claims**

1. A modular float drum assembly for use in supporting a floating structure such as a floating dock, a swim float and the like comprising:

at least two one-piece float drum modules, each drum module having a top wall, a bottom wall and contiguous first, second, third and fourth side walls extending between said top and bottom walls to define a buoyant enclosure contained therein;

each drum module having a load bearing, rigidizing side flange at opposite sides of said top wall, said side flange including a generally flat top wall section, a generally flat bottom wall section, and a contiguous edge wall section at

the ends of said flange's top wall section and bottom wall section to provide a spacing therebetween whereby the rigidity of said side flange is increased, said first side wall of said drum module spaced inwardly from said edge wall of one of said flanges and contiguous with said bottom wall of one of said flanges, said second side wall of said drum module similarly spaced inwardly from said edge wall surface of the other flange and contiguous with said bottom wall surface of said other flange;



said third side wall of said drum module generally perpendicular with said drum module's top and bottom walls and extending continuously from said first side wall to said second side wall; and

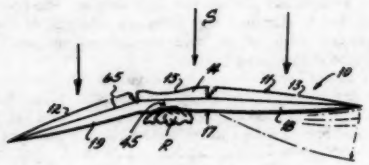
module securing means for joining said third side wall of one drum module with said third side wall of another drum module so that said third side walls are substantially in face-to-face continuous contact throughout the surface thereof.

4,799,446

KAYAK CONSTRUCTION

Thomas G. Wilson, Rte. #1, Box 1391B, McKee, Ky. 40447

Filed Feb. 10, 1983, Ser. No. 465,438
Int. Cl.[4] B63B *35/71*
U.S. Cl. 114—347 29 Claims



1. A boat having a hull, deck and a cockpit opening disposed within a cockpit area of said deck and including:

a hull made of material having a first elongation factor;

a deck made of material having a similar elongation factor;

said hull and deck defining between them a space for receiving the legs of a user and extending forwardly therein from a position near said cockpit opening; and

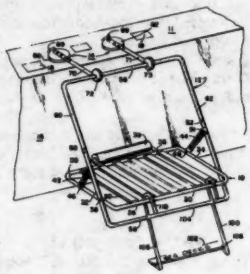
a frangible cockpit area defining and comprising a part of said deck, forward of said cockpit opening, said cockpit area made of material having a second elongation factor, less than said first elongation factor, wherein said cockpit area has a tendency to break apart, as opposed to stretching, when said boat is subjected to a wrapping stress tending to bend said hull around an obstruction, thereby opening said frangible cockpit area of said deck when said boat is bent around an obstruction.

4,799,447

PORTABLE BOARDING PLATFORM

Gary Hebert, 9489 Affirmed La., Boca Raton, Fla. 33434, and Stacey Leone, 340 NE. 43rd Ct., Ft. Lauderdale, Fla. 33334

Filed May 6, 1987, Ser. No. 46,576
Int. Cl.[4] B63B *29/26;* E01D *1/00*
U.S. Cl. 114—362 20 Claims



1. A portable boarding platform for the side of a boat hull or boat transom comprising,

(a) A base platform defined by a rectangular tubular frame having a front section with a flat bar fixidly attached to its length, a back section having a second flat bar fixidly attached to its length, a first side section and a second side section, said side sections are shorter than said front and back sections, fixed planking spanning the distance between front and back sections, and

(b) a carrier bar defined by a rectangular tubular member having a top section, a bottom section and telescopically engaged first and second side sections with thru hole pins, whereby said carrier bar provides the support and adjusts the vertical distance of said base platform to the side of the boat hull or boat transom, and

(c) said base platform at the front portion of the first and second side sections are hingedly connected to the telescopic side sections of said carrier bar, a further connection is on the back portion of the side sections of said base platform being a pivotable hinge with its opposite ends attaching and being alidably locked to the pin connections on the telescopic side sections of said carrier bar, whereby said base platform is folded and unfolded within the framework of said carrier bar for convenient storage purposes,

(d) means for mounting and dismounting portable platform to the side of a boat hull or boat transom including a self locking, quick release assembly having adaptability to various boat designs of different boat manufacturers.

4,799,448

PORTABLE TRAFFIC MARKER

Wilhelm Junker, Reutlinger Strasse 14, D-1750 Backnang, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,389
Claims priority, application Fed. Rep. of Germany, May 31, 1986, 3618404; May 9, 1987, 8706705[U]
Int. Cl.[4] E01F *9/01, 9/02;* G09F *15/00*
U.S. Cl. 116—63 P 20 Claims

1. A portable traffic marker comprising:

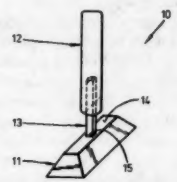
a marker plate;

a footplate having a generally rectangular receiving portion;

means for securing a post in said receiving portion;

a post for supporting said marker plate, said post being made of metal or plastic and consisting essentially of two opposed, generally parallel longitudinal side segments and two longitudinal middle segments, each of said middle

segments being joined along a back longitudinal edge to a respective back longitudinal edge of one of said side segments and extending from said back longitudinal edge to a front longitudinal edge located at approximately the midpoint of a line between the front longitudinal edges of said side segments, said middle segments being joined to each



other along their front longitudinal edges, whereby the cross-sectional profile of said side and middle segments generally resembles an M and whereby said post resists bending when subjected to lateral loads from such forces as wind surges or vehicle slipstreams while bending readily when subjected to higher lateral loads from such forces as the impact of a vehicle.

4,799,449

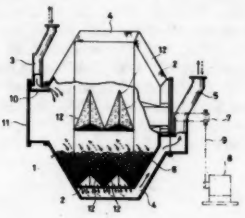
COATING APPARATUS

Katsuaki Miyata, Ikeda; Yutaka Sakuma, Toyono; Shimesu Motoyama, Asaka; Masakazu Gotou; Hiromu Shirakawa, both of Tokyo, and Takamoto Makino, Sakado, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Continuation of Ser. No. 725,317, Apr. 19, 1985, abandoned. This application Dec. 23, 1986, Ser. No. 946,135

Int. Cl.[4] B05C *5/00*

U.S. Cl. 118—19 **3 Claims**



1. A coating apparatus including a rotatable coating pan, said coating pan being provided on a peripheral sidewall thereof with ventilating areas, wherein said apparatus is further provided at positions covering said ventilating areas with baffle means including:

a leading edge having a pointed tapered shape relative to the rotational direction of the coating pan;

a trailing edge having a height, to which the minimum height of the leading edge is gradually increased and a width, to which the minimum width of the leading edge is gradually increased;

a bottom face fixed to the inner wall surface of the coating pan from the leading edge to the trailing edge;

an inclined side edge extending gradually from the leading edge to the trailing edge maximum height;

the baffle means having two non-perforated inclined surfaces and having a triangular ventilating opening at said trailing edge, which is communicated with ventilating apertures of the perforated area formed in the wall surface of the coating pan,

whereby articles treated in said coating apparatus are scooped up at the leading edge of said baffle means and tend to flow smoothly down said inclined surface and over said trailing edge as said coating pan is rotated.

4,799,450

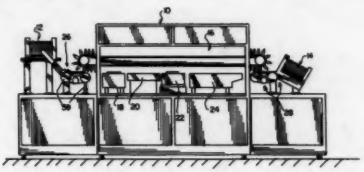
TINNING SYSTEM FOR SURFACE MOUNT COMPONENTS

J. Rene Cornellier, St. Julie, Canada, assignor to Corfin Technologies Inc., Chambly, Canada

Filed Mar. 27, 1987, Ser. No. 30,568

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—63 **10 Claims**



1. A tinning system for applying a hot solder coating to the leads of electronic components comprising:

(1) an endless closed loop conveyor having input and output positions;

(2) a plurality of processing stations intermediate said input and output positions;

(3) a plurality of vacuum gripping devices mounted on said conveyor, each vacuum gripping device comprising

(a) a body portion

(b) an inlet port

(c) an outlet port

(d) a passageway extending between said inlet port and said outlet port

(e) a valve member mounted in said passageway, said valve member being movable between a first open position to permit gas passage between the inlet port and outlet port, and a second closed position to seal said passageway;

(4) means for feeding individual ones of said electronic components in a synchronized relationship with said vacuum gripping devices to said input position such that when a vacuum gripping device is at said input position, a component is placed proximate said outlet port;

(5) vacuum creating means mounted in operative relationship to said vacuum gripping devices at said input position to create a vacuum at said inlet port of said vacuum gripping device and means for urging said valve from said first open position when said vacuum is applied to said closed position when said vacuum creating means are removed such that a vacuum is maintained in said passageway to retain said component at said outlet port during transportation through said processing stations.

4,799,451

ELECTRODE BOAT APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS OR THE LIKE

Steven J. Gardner, Scottsdale, Ariz., assignor to ASM America, Inc., Phoenix, Ariz.

Filed Feb. 20, 1987, Ser. No. 17,778

Int. Cl.[4] B05C *11/14, 13/00*

U.S. Cl. 118—500 **13 Claims**

1. In a chemical vapor processing apparatus for processing workpieces in a plasma reaction within an evacuable envelope for containing the chemical vapor and the workpieces, an electrode boat assembly removably insertable within the envelope, comprising:

a plurality of electrically conductive electrode plate members, each of said electrode plate members having a plurality of openings passing therethrough and each of said

electrode plate members being interleaved with respect to each other such that correspondingly positioned openings in each of said plurality of electrode plate members are in axial alignment along a length of the electrode boat assembly thereby forming a plurality of sets of axially aligned openings;

a plurality of insulating support rod members, one of said plurality of insulting support rod members passing through one of said plurality of sets of axially aligned openings;

at least one conducting rod passing through at least one set of axially aligned openings in said plurality of electrode

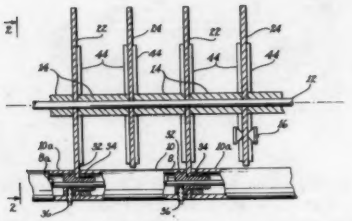


plate members, said conducting rod electrically contacting every other one of said plurality of electrode plate members; and

a plurality of insulating sleeve means disposed co-axially on each of said plurality of insulating rods and said at least one conductive rod and further disposed between interleaved pairs of said plurality of electrode plate members for supporting and spacing each of said plurality of electrode plate members, wherein said plurality of insulating rods, said at least one conductive rod, and said plurality of insulating sleeve means all have substantially the same coefficient of thermal expansion.

4,799,452

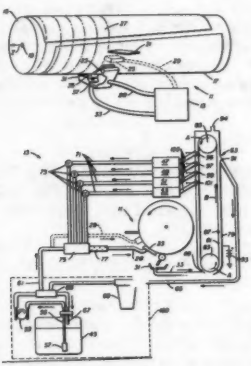
LIQUID TONER RECYCLING SYSTEM AND METHOD

Gene F. Day, Hillsborough, Calif., assignor to Precision Image Corporation, Redwood City, Calif.

Filed Jul. 23, 1987, Ser. No. 77,104

Int. Cl.[4] G03G *15/10, 21/00;* B03C *5/02;* B05C *11/10*

U.S. Cl. 118—645 **31 Claims**



1. A system for recycling liquid toner comprising,

at least one tank of color concentrate containing charge-bearing solid pigment particles,

a supply tank of substantially particle-free fluid dispersant,

means communicating with said supply tank for supplying a stream of said dispersant from said supply tank,

means communicating with said at least one tank of color concentrate for selectively injecting an amount of color concentrate into said stream of dispersant and for mixing said color concentrate into said dispersant to form a stream of a toner fluid,

a toner fluid applicator communicating with said injecting and mixing means for receiving said stream of toner fluid and applying said toner fluid to a surface,

means disposed with respect to said toner fluid applicator for collecting excess toner fluid from said surface,

means communicating with said collecting means for electrically separating said charge-bearing solid pigment particles from said excess toner fluid leaving substantially particle-free fluid dispersant, said means for electrically separating said pigment particles including an electrical biasing source and a particle accumulating surface, said biasing source being in electrical communication with said excess toner fluid to cause said pigment particles to collect on said particle accumulating surface,

motion means for moving said particle accumulating surface to a location where said collected pigment particles may be removed therefrom,

means for removing said collected pigment particles from the particle accumulating surface,

means for returning said substantially particle-free fluid dispersant to said supply tank, and

means for returning said pigment particles removed from said particle accumulating surface to said at least one tank of color concentrate from which said particles originally came.

4,799,453

SOLIDIFICATION OF LIQUID FILMS

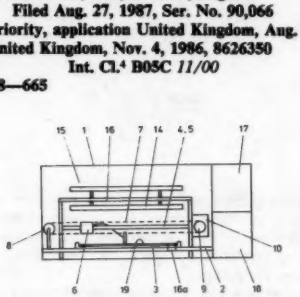
James H. Nobbs, Bardsey; Peter K. T. Oldring, and David Duerden, both of Morpeth, all of England, assignors to Thomas Swan & Co., Ltd., Durham, England

Filed Aug. 27, 1987, Ser. No. 90,066

Claims priority, application United Kingdom, Aug. 28, 1986, 8620807; United Kingdom, Nov. 4, 1986, 8626350

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—665 **7 Claims**



1. An apparatus for monitoring the solidification characteristics of a solidifiable liquid film coated onto the surface of a substrate which apparatus comprises:

(i) a means of supporting the coated substrate whilst the film is solidifying,

(ii) a stylus mounted so as to penetrate the liquid film and contact the surface of the substrate,

(iii) a means of effecting relative movement between the stylus and the substrate so that the stylus moves with respect to the surface of the substrate and through the film whilst the film is solidifying, and

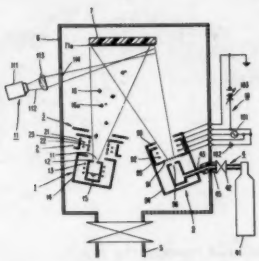
(iv) means of monitoring the resistance to movement of the stylus through the film to obtain a measure of the solidification characteristics of the film.

4,799,454

APPARATUS FOR FORMING A THIN FILM

Hiroki Ito, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1987, Ser. No. 139,748
Claims priority, application Japan, Apr. 27, 1987, 62-101753
Int. Cl.[4] C23C *14/48, 8/36, 16/48*
U.S. Cl. 118—723 15 Claims



1. An apparatus for forming a thin film comprising a vacuum chamber maintained at a predetermined degree of vacuum, an ion cluster beam device for jetting a vapour of a material to be deposited toward a substrate disposed in said vacuum chamber to ionize a cluster of said material to be deposited and accelerate the ionized cluster; and

a reactive gas supply means for supplying an inside of said vacuum chamber with the reactive gases reacting with said material to be deposited

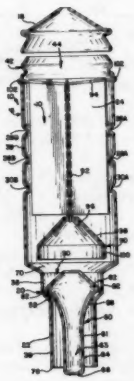
for forming a thin film of said material to be deposited on said substrate by a reaction of said material to be deposited with said reactive gases, characterized by that an excimer laser beam emitting means for emitting the excimer laser beam toward the neighborhood of said substrate is provided.

4,799,455

FARROWING CRATE CREEP FEEDER

Charles O'Kelley, Rte. 16 E., Shelbyville, Ill. 62565

Filed Mar. 2, 1987, Ser. No. 20,605
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—51 R 18 Claims



18. An animal feeding device for containing granular feed placed therein and dispensing selected amounts of said feed upon demand by an animal, said device comprising:

A. container means for forming an interior chamber adapted to contain said feed, said container means including a bottom port for dispensing feed from said chamber under gravity flow, said bottom port including a circular valve seat at said chamber and a narrower depending delivery tube terminating at a bottom edge;

B. control valve means freely floating at said bottom port for opening and closing said bottom port, said valve means having an undersurface normally engaging along substantially all of said circular valve seat to close said bottom port, and having a stem depending from said under surface and hanging in said dispensing tube to present a bottom end extending below said bottom edge of said dispensing tube, said undersurface remaining engaged with said valve seat upon movement of said stem bottom end laterally of said dispensing tube and disengaging from said valve seat upon movement of said stem bottom end longitudinally of said dispensing tube; and

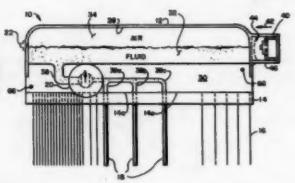
C. umbrella means suspended at a fixed position in said chamber for carrying at least some of the weight of the feed adapted to be contained in said chamber that otherwise would bear on said control valve means.

4,799,456

COMBINATION MEDICATION APPLICATOR AND PET GROOMING

Donald R. Young, 12859 Honeybrook Dr., Hudson, Fla. 33562, assignor to Donald R. Young and Ruth L. Young, both of Hudson, Fla.

Continuation-in-part of Ser. No. 9,672, Feb. 2, 1987, abandoned. This application Apr. 4, 1988, Ser. No. 178,865
Int. Cl.[4] A01K *13/00*
U.S. Cl. 119—83 20 Claims



1. A combination tool of the type having utility as a brush in connection with pet grooming and having utility as an applicator of topical medication in connection with pet health care, comprising:

a base member having a hollow upper chamber and a solid lower portion;

a squeeze bulb means disposed in fluid communication with said hollow upper chamber;

said upper chamber retaining a predetermined quantity of topical medication in liquid form;

a passageway having plural, substantially parallel branches formed in said solid lower poriton;

said branches being longitudinally spaced along the extent of said lower portion;

a first end of said passageway confluent with said hollow chamber;

said first end of said passageway providing a drain means that permits said medication to flow from said upper chamber into said branches;

said drain means having a diameter substantially greater than the respective diameter of said branches;

a first bristle and tube mounting means detachably secured to a bottom side of said base solid portion;

a plurality of tube members extending substantially normal relative to said mounting means, there being as many tube members as there are passageway branches;

each of said branches confluent with an associated tube member;

a valve means formed in said lower portion for selectively opening and closing said drain means so that a fluid within said hollow chamber flows through said drain means and hence into said tube members when said valve means is open;

said valve means having a valve stem with an orifice formed therein, said orifice being rotationally and axially alignable with said drain means when said valve means is manipulated;

a plurality of bristle members mounted in said first mounting means and extending therefrom in substantial parallelism relative to said tube members, said bristle members and said tube members having a first common length;

said valve means being biased so that when said valve means is in its equilibrium position, said orifice is axially misaligned with said drain means;

said orifice being bell-shaped so that it substantially aligns with said passageway even when said orifice and valve means are slightly misaligned;

said drain means having a diameter equal to the largest diameter of said orifice and said branches having a diameter equal to the smallest diameter of said orifice.

4,799,457

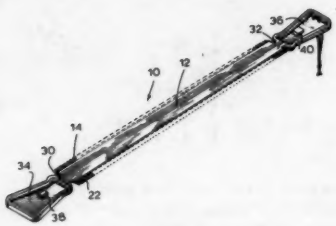
GROOMING COMB FOR PETS

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed May 14, 1987, Ser. No. 50,098

Int. Cl.[4] A01K *13/00*

U.S. Cl. 119—92 **2 Claims**



1. A comb for grooming animals comprising an elongated flexible strip of plastic material bendable into a tear-drop shape, and having a handle member at each end, each of said handle members being integrally formed with said strip to be substantially mirror images of each other, and having exterior and interior surfaces, one of said handles being formed on its interior surface with latch receiving means and the other of said handles being formed on its interior surface with a latch, said members being engageable with their interior surfaces in sliding contact so that said latch is removably inserted in the latch receiving means to hold said handle members together, said strip being formed along one edge with uniformly shaped and spaced V-shaped teeth having tip and bases rounded in the plane of said strip and transverse to the plane of said strip, and along its opposite edge with uniformaly shaped and spaced straight teeth parallel to each other said straight teeth having rounded tops and rounded bases, said bases meeting along a common line, said strip generating an electrostatic charge in the hair of the animal causing the hair to stand straight and raise dirt, loose hair and other impurities from the skin of the animal for easy removal.

4,799,458

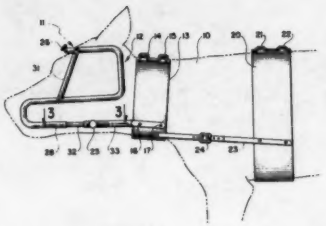
ANIMAL RESTRAINT COLLAR

Jean Gosborn; L. David Loucks, and Terry K. Loucks, all of 7604 Wheatland, Sun Valley, Calif. 91352

Filed Sep. 8, 1987, Ser. No. 93,753

Int. Cl.[4] A01K *29/00*

U.S. Cl. 119—96 **1 Claim**



1. An animal head restraint comprising:

a neckband of sufficient width to substantially occupy the neck area of the animal's body;

a rigid head frame secured to said neckband having a front portion projected forwardly in a cantilevered deployment, opposite side portions extending about the opposite sides of the head and a cross portion extending across the forehead of the head having its opposite ends secured to said side portions respectively so as to define an open and unrestricted frontal area to accommodate the jaws and mouth of the animal;

a torso strap retained about the body of the animal in spaced apart relationship with respect to said neckstrap;

connection means joining said torso strap and said neckstrap together;

adjustment means carried on said head frame cross portion said side portions for transversely widening said frame and longitudinally lengthening said frame;

said side portions being a pair of tubular longitudinally adjustable side member joined together by said transversely adjustable cross portion;

brace means carried on each side member to reinforce, stabilize and maintain rigidity of said frame;

buckle means detachably joining opposing ends of said neckband together, detachably joining opposing ends of said torso strap together and detachably coupling said connection means together; and

said neckband and said strap being of semi-rigid composition.

4,799,459

ROBOT AGUA-FEEDER

Kao Yi-Tung, No. 75-10, Yi Choo Lii, Yen Sui Tseng, Tainai Shien, Taiwan

Filed Jul. 21, 1987, Ser. No. 76,115

Int. Cl.[4] A01K *61/02*

U.S. Cl. 119—51.11 **5 Claims**

1. An automatic guiding, charging, and timed feed-spraying feeder system, which comprises:

a. a floatable main body; the body having sides and at each side thereof having a power box; batteries on the body; a propelling motor in each power box, the propelling motors connected with the batteries for being powered; the fore end carrying a steering motor; the steering motor being mounted in a direction perpendicular to the moving direction of the body;

b. a forward supporting member extending forward from the body and a first photoelectric sensor mounted thereon;

c. a sideward supporting member extending transversely from the body and a side photoelectric sensor mounted thereon;

d. a central photoelectric sensor mounted at a central portion of the body;

e. a control unit which is connected to the sensors to receive the signals from the photoelectric sensors and is connected to and controls the rotational speed of the motors;

f. a feed storage tank in the central portion of the body, a narrow opening provided at the bottom of the tank; a blower, a 3-way tube having two branches connected with the exterior of the tank, and a third branch connected to the blower, the blower being also connected to and under the command of the control unit;

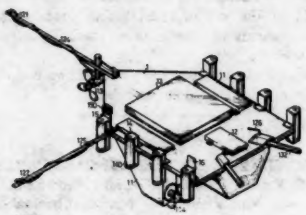
B. an automatic charging device including:

a. fixed parts and a wharf which comprises two groups of floats movably and slidably attached to corresponding fixed posts, each of the posts being connected to a continuous tube extending along the wharf;

b. a plurality of pulleys; the pulleys being movable and rotatably provided at the two sides of the body for cooperation with the tubes of the wharf;

c. a charging post provided at the fore end of one side of the body; the charging post having two sides thereof on which are provided two conducting plates connected to the positive and negative poles of the batteries and an insulation cushion provided between the conductive plates;

d. an orienting post provided at the rear end of the one side of the body;



e. charging means comprising a set of conductive terminals which are connected to the positive and negative poles of the batteries and have arcuate shape, the charging means being attached to one of the floats and being arranged in the position corresponding to the conductive plates of the charging post;

f. a magnetically controlled positioning device which forms a gate which be opened at timed intervals to allow the body to pass;

g. a stop device engaging the body against backward movement and which comprises a one-way pin, a spring, and a directing tube, and which is in cooperation with the positioning device such that the conductive plates of the charging post can be positioned to contact the conductive terminals in carrying out the charging operation;

h. a stopping rod placed for being sensed by the central photoelectric sensor which can send a signal to the control unit which then can command all the power from the batteries to the motors to be cut off;

whereby, owing to the cooperation between the photoelectric sensors and the control unit for commanding the motors to control the moving direction of the body, automatic guidance and timed feed-spraying are achieved; and the batteries in the body are charged after each navigational turn of the body to obtain the capability of continuous navigation.

4,799,460

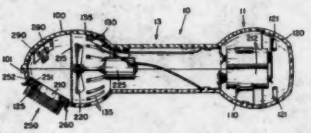
VACUUM CLEANER FOR PETS

Lynn Kuhl, 1225 Fern Lake Ave., Brea, Calif. 92621

Filed Sep. 25, 1987, Ser. No. 101,004

Int. Cl.[4] A01K *13/00*

U.S. Cl. 119—85 **7 Claims**



1. A pet vacuum cleaner apparatus comprising,

housing means,

said housing means includes at least an upper housing portion and a lower housing portion which housing portions are joined together to form said housing means,

prime mover means mounted within said housing means,

said housing means includes a relatively narrow, cylindrical middle section and a pair of relatively enlarge end sections

said prime mover means comprises a lightweight, low voltage motor which produces minimal noise during operation thereof,

power source means,

switch means mounted in said upper housing portion and connected between said power source means and said prime mover means to selectively energize said prime mover means via said switch means,

fan blade means connected to and driven by said prime mover means with said housing means,

intake means disposed in said housing means in order to provide an air passage through the wall of said housing means,

end caps means adapted to be attached to said upper and lower housing portions at the opposite end of said housing relative to the intake means,

brush means adapted to be mounted at said intake means,

said brush means is selectively detachable from said housing means whenever said housing may be emptied of accumulated debris,

said brush means includes an annular disk with a relatively large central aperture therethrough,

said brush means includes a plurality of pliant bristles mounted in and extending axially out of said annular disk, and

screen means mounted within said housing means between said fan blade means and said intake means.

4,799,461

WASTE HEAT RECOVERY BOILER

Toshinori Shigenaka, and Iwao Kusaka, both of Kure, Japan, assignors to Babcock Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1988, Ser. No. 163,514

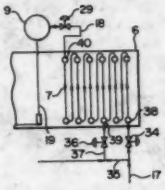
Claims priority, application Japan, Mar. 5, 1987, 62-48793

Int. Cl.[4] F22D *1/00*

U.S. Cl. 122—7 R **8 Claims**

1. A waste heat recovery boiler comprising heat exchange rate switching means for controlling the rate of heat exchange between an exhaust gas and feedwater in a heat exchanger by changing the state of said feedwater in accordance with the concentration of sulfur oxides in said exhaust gas, thereby

maintaining the temperature at which low temperature corrosion due to said exhaust gas is prevented in a downstream



portion of said heat exchanger in the direction in which said exhaust gas flows.

4,799,462

HYDRAULIC VALVE DRIVE FOR INTERNAL COMBUSTION ENGINES

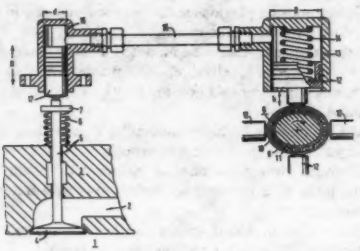
Gabriel Tittizer, Rösrath, and Ewald Junghans, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Division of Ser. No. 827,290, Feb. 6, 1986, abandoned. This application May 18, 1987, Ser. No. 52,247

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1985, 3504639

Int. Cl.[4] F01L *9/02*

U.S. Cl. 123—90.12 **2 Claims**



1. Valve drive for a combustion engine with a hydraulic tranmission system between a control member and a valve, comprising means for stepping up the hydraulic transmission, the valve having a first cylinder wherein a first piston displaceable by the control member slides and a second cylinder tightly connected by at least one line to said first cylinder and having a second piston slideable therein for moving the valve, the diameter of said first cylinder being larger than the diameter of said second cylinder, said first and second cylinder and said at least one line forming a closed system, the combustion engine having a crankshaft, and including an auxiliary shaft driven by the crankshaft and having at least a portion of the length thereof formed with a noncircular cross section, a rolling bearing mounted on said auxiliary shaft and having an outer race fixed in space and being forcibly deformed by rotation of said auxiliary shaft and stressing of said outer race only within elastic limits, and means for pressing said first piston against said outer race for eliminating relative motion therebetween during operation of the valve drive.

4,799,463

VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

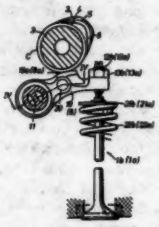
Tsuneo Konno, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1987, Ser. No. 122,080

Claims priority, application Japan, Nov. 18, 1986, 61-176880[U]

Int. Cl.[4] F01L *1/34, 1/04*

U.S. Cl. 123—90.17 **11 Claims**



1. A valve operating mechanism for an internal combustion engine having cams rotatable in synchronism with a crankshaft, a pair of valves disposed in intake or exhaust ports of a combustion chamber, and means for transmitting lifting motion of said cams to said valves, characterized in that

said cams include two or more cams having different cam profiles corresponding to respective ranges of rotational speeds of the engine, said lifting motion transmitting means comprising four or more mutually adjacent members, and

switching means for selectively connecting and disconnecting the mutually adjacent members.

4,799,464

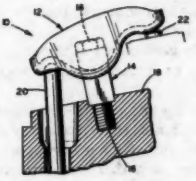
BOAT-TYPE ROCKER ARM ASSEMBLY

Ramanlal L. Patel, Minnetonka, Minn.; Meng-Sang Chew, Virginia Beach, Va.; Richard A. Marsh, Birmingham, Mich.; Richard C. Rosenberg, Romeo, Mich., and Henry Thomas, Jr., Grosse Pointe Woods, Mich., assignors to Toledo Stamping & Manufacturing Company, Toledo, Ohio and General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1983, Ser. No. 471,756

Int. Cl.[4] F01L *1/18*

U.S. Cl. 123—90.41 **19 Claims**



1. A boat-type rocker arm assembly comprising a pedestal having a fulcrum and a shank of generally rectangular shape in transverse cross section, said fulcrum extending outwardly beyond two opposite sides of said shank, said fulcrum having curved lower surfaces of a predetermined radius, an elongate boat-type rocker arm having a curved intermediate interior surface extending thereacross between its ends, said interior surface having a radius greater than the radius of said fulcrum, said interior surface being straight as viewed in cross section taken perpendicular to the longitudinal extent of said rocker arm, whereby said lower surfaces of said fulcrum engage said

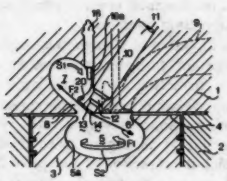
interior surface on substantially line contact extending perpendicular to the longitudinal extent of said rocker arm, said rocker arm having a rectangular opening centrally located in the intermediate surface through which said shank of said pedestal extends, said rectangular opening having transverse edges extending across said rocker arm and tapering downwardly and inwardly, said pedestal having opposite curved areas, as viewed in longitudinal section through said shank, on the other two opposite sides of said shank at the portions thereof which extend through said rectangular opening, the dimension between said opposite curved areas being slightly less than the corresponding dimension across said opening between said transverse edges, whereby the cooperation of said rectangular opening and said pedestal substantially prevents longitudinal movement of said rocker arm relative to said pedestal.

4,799,465

COMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINES

Naoki Yanagisawa, and Yoshihiko Sato, both of Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Mar. 12, 1987, Ser. No. 24,943
Claims priority, application Japan, Mar. 14, 1986, 61-55090
Int. Cl.[4] F02B *19/08*
U.S. Cl. 123—256 **8 Claims**



1. A combustion chamber for an internal combustion engine, comprising:

a main combustion chamber defined by a recess in the top of a piston of the engine, said main combustion chamber being formed with its opening diameter progressively enlarged downwards in the axial direction of said main combustion chamber, and a lip part formed along the periphery of the opening of said main combustion chamber, said lip part protruding radially and inwardly;

a swirl chamber formed inside a cylinder head of the engine;

a passage for connecting said main combustion chamber with said swirl chamber, said passage being defined in said cylinder head and having a wall portion tangentially aligned with a portion of the wall of the swirl chamber corresponding to the upstream end of said swirl chamber such that the compressed air introduced into said swirl chamber is substantially directed along said wall of said swirl chamber to swirl therein, said passage having a longitudinal axis generally directed to the central portion of said main combustion chamber; and

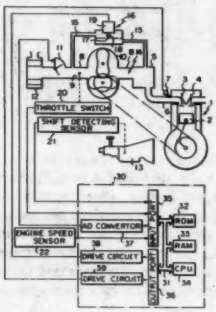
a fuel injection nozzle means for supplying fuel mist into said swirl chamber through said passage as well as into said main combustion chamber, said fuel injection nozzle means directing fuel mist into said swirl chamber substantially parallel to said tangential wall portion such that said fuel mist is carried by said compressed air directed along said tangential wall and revovled with said swirl chamber.

4,799,466

DECELERATION CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Yoshiaki Shibata, and Hidemi Ohnaka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 800,347, Nov. 21, 1985, abandoned. This application Jul. 9, 1987, Ser. No. 73,316
Claims priority, application Japan, Nov. 29, 1984, 59-250396; Nov. 29, 1984, 59-250398
Int. Cl.[4] F02D *21/10*
U.S. Cl. 123—327 **12 Claims**



1. A deceleration control device of an internal combustion engine having an intake passage which has a throttle valve therein, said engine including a automatic transmission with at least a neutral and a drive position, said device comprising:

a bypass passage branched from a location in the intake passing upstream of the throttle valve to a location in the intake passage downstream of the throttle valve;

valve means arranged in said bypass passage for controlling a flow area of said bypass passage;

means for supplying fuel, arranged in said intake passage;

detecting means for detecting a deceleration state of the engine and producing an output signal representing said deceleration state;

fuel supply control means for controlling said fuel supply means in response to the output signal of said detecting means to produce a fuel cut signal to cut the supply of fuel from said fuel supply means when said deceleration state is a predetermined deceleration state; and

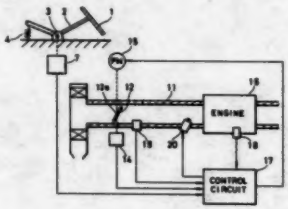
valve control means for controlling said valve means in response to said fuel cut signal to increase the flow area of said bypass passage when the supply of fuel from said bypass means is cut, wherein said valve means opens to increase the flow area of said bypass passage by a predetermined flow area when said fuel cut signal is produced, and said valve means closes to reduce the flow area of said bypass passage when the production of said fuel cut signal is stopped, said predetermined flow area being further changed in accordance with a shift range of said automatic transmission and being larger in said neutral position than in said drive position.

4,799,467

THROTTLE VALVE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa, and Kouji Yamaguchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1987, Ser. No. 73,616
Claims priority, application Japan, Jul. 16, 1986, 61-168843; Jul. 16, 1986, 61-168845; Jul. 16, 1986, 61-168847; Jul. 16, 1986, 61-168848
Int. Cl.[4] F02D 9/02, 41/04
U.S. Cl. 123—399 7 Claims



1. A throttle valve control system for controlling the opening of a throttle valve disposed in an air induction system of an internal combustion engine when said throttle valve is in a position other than its idle position, comprising:

engine speed detection means for detecting the rotational speed of said internal combustion engine;

pressure detection means for detecting the actual pressure in an intake pipe of said air induction system, downstream of said throttle valve;

setting means for setting a target pressure in the intake pipe to attain a minimum fuel consumption rate of said internal combustion engine in accordance with said rotational speed detected by said engine speed detection means; and

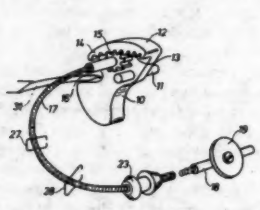
drive means for driving said throttle valve in a direction and by an amount selected to reduce the actual pressure in said intake pipe when the actual pressure in the intake pipe detected by said pressure detection means is higher than said target pressure set by said target pressure setting means and to increase the actual pressure in said intake pipe when the actual pressure detected by said pressure detection means is lower than said target pressure set by said target pressure setting means.

4,799,468

THROTTLE CONTROL DEVICE

George N. Farquhar, Alingsås, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Oct. 23, 1986, Ser. No. 922,171
Claims priority, application Sweden, Oct. 31, 1985, 8505145
Int. Cl.[4] F02D 9/02
U.S. Cl. 123—400 8 Claims



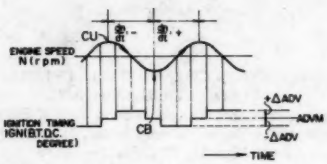
1. In a throttle control device for an i.c. engine supported by devibration elements in a member comprising a handle, said control device including a finger grip, a throttle on an axis and transferring means for transmitting movement between the finger grip and said throttle axis, the improvement wherein the finger grip is mounted to said member for pivotal movement, the transferring means includes a flexible shaft extending in a bow between the finger grip and the axis of said throttle, the finger grip being mounted to rotate the flexible shaft in response to pivoting movement thereof to transmit rotary movement to said throttle.

4,799,469

APPARATUS AND METHOD FOR CONTROLLING IGNITION TIMING FOR INTERNAL COMBUSTION ENGINE

Masami Nagano; Takeshi Atago, and Toshio Manaka, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 446
Claims priority, application Japan, Jan. 8, 1986, 61-614
Int. Cl.[4] F02P 5/04, 5/08
U.S. Cl. 123—418 9 Claims



1. A method for controlling ignition timing comprising the steps of:

determining a fundamental ignition timing amount based on an engine operating condition;

determining a direction of change in an engine speed which indicates whether the speed is increasing or decreasing;

determining a correction ignition timing amount based on the direction of change in the engine speed, said correction ignition timing amount having a value which is substantially ineffective at an engine speed in the vicinity of a point at which the direction of change of the engine speed is inverted and is a maximum value at a time point at which the changing rate of the engine speed is maximum; and

determining ignition timing by adding or subtracting said correction ignition timing amount to or from said fundamental ignition timing amount.

4,799,470

SUPPORTING STRUCTURE FOR AIR-CLEANED ASSEMBLY

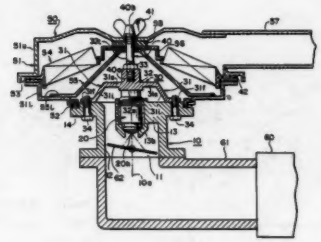
Minoru Honda, Obu; Toshiaki Fukuta, Nagoya; Akihide Yamaguchi, Kariya, and Kenzi Ikuta, Hekinan, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 9, 1987, Ser. No. 106,517
Claims priority, application Japan, Oct. 13, 1986, 61-241556
Int. Cl.[4] F02M 39/00
U.S. Cl. 123—470 4 Claims

1. A supporting structure for supporting an air-cleaner assembly on a throttle body of an internal combustion engine provided with a fuel injector arranged at a center of an intake passage formed in said throttle body, said supporting structure comprising:

a bridge member having a joining portion and at least two legs, each of said legs having one end fixed to said throttle body and the other end extending radially inwardly toward a central axis of said intake passage, the other ends of said legs being joined to each other at said joining portion, said joining portion being abutted against an end

of said fuel injector opposite to a fuel injection port thereof; and



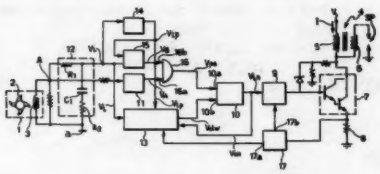
fixing means cooperating with said bridge member for fixing said air-cleaner assembly with respect to said throttle body.

4,799,471

ELECTRONIC SYSTEM FOR CONTROLLING THE IGNITION OF AN INTERNAL COMBUSTION ENGINE, PARTICULARLY FOR MOTOR VEHICLES

Diego Lasagna, Chieri, and Francesco P. Mandara, Turin, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Feb. 26, 1988, Ser. No. 160,875
Claims priority, application Italy, Feb. 26, 1987, 67137-A/87
Int. Cl.[4] F02P *1/00*
U.S. Cl. 123—644 3 Claims



1. An electronic system for controlling the ignition of an internal combustion engine, comprising:

a magnetic pulse generator (1 to 3) for outputting a signal (A) having a frequency and amplitude substantially proportional to the rate of rotation (n) of the engine,

an ignition coil (4 to 6) the secondary winding (6) of which can be coupled selectively and cyclically to the plugs (SP) of the engine to generate the spark,

a switching transistor (7) connected to the primary winding (5) of the coil (4 to 6), and

an electronic control circuit (8 to 34) which is connected to the pulse generator (1 to 3) and to the switching transistor (7) and which, in order to cause a spark to be generated, is arranged to cause

a. the transistor (7) to become saturated at a first moment determined by the characteristics of the signal (A) from the pulse generator (1 to 3) to allow current to pass through the primary winding (5) of the ignition coil (4 to 6),

b. the transistor (7) to be desaturated immediately the current (I) has reached a predetermined value in order to limit the intensity of the current, and

c. the transistor (7) to be cut off at a second moment determined by the characteristics of the signal (A) from the pulse generator (1 to 3) to interrupt the current (I), characterised in that the control circuit (8 to 34) includes:

electrical sensor means (14) for providing a signal (V_{ip}) indicative of the rate of rotation of the engine, and

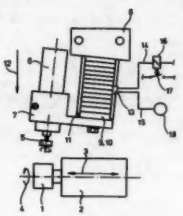
a circuit (C_2, 20 to 23) for regulating the desaturation time of the transistor (7), coupled to the electrical sensor means (14) and arranged to control the time for which the transistor (7) is conductive so that the length of the desaturation time of the transistor (7) is substantially nil when the rate of rotation of the engine is greater than the predetermined value (n_0).

4,799,472

METHOD OF AND ARRANGEMENT FOR DRESSING GRINDING WHEELS

Hans K. Tönshoff, Burgwedel; Thomas Grabber, Hanover; Harald Gosebruch, Hanover, and Jürgen Jendryschik, Hanover, all of Fed. Rep. of Germany, assignors to Ernst Winter & Sohn (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Aug. 19, 1987, Ser. No. 87,687
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1986, 3628143
Int. Cl.[4] B24B *53/053*
U.S. Cl. 125—11 R 7 Claims



1. A method of dressing of grinding wheels with diamond or cubic crystalline boron nitride as grinding material, by means of a diamond tool connected with a piezoelectric element, comprising the steps of bringing a dressing tool in contact with a grinding wheel to be dressed; determining the contact between the dressing tool and the diamond wheel by measuring an electrical voltage of the piezoelectric element; stopping the dressing tool after establishing the contact between the dressing tool and the grinding wheel; and feeding the dressing tool after the stopping by applying an electrical voltage to the piezoelectric element and with a value corresponding to the applied electrical voltage.

4,799,473

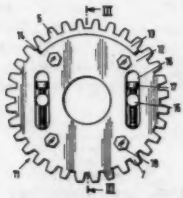
GEARLIKE DRESSING TOOL

Manfred Erhardt, Puchheim, and Herbert Loos, Dorfen-Stadt, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Nov. 6, 1987, Ser. No. 118,194
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638966
The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.
Int. Cl.[4] B24B *53/06*
U.S. Cl. 125—11 CD 5 Claims

1. In a dressing tool for dressing of abrasive gearlike precision-working tools, comprising a metallic, gearlike constructed base member which has plural teeth on its periphery, which teeth are coated with extremely hard abrasive grains, in particular diamond or cubic boron nitride, the improvement comprising wherein said coated teeth are provided in only one

sector of the entire gear, wherein the remaining teeth are not coated and wherein the thickness of said uncoated teeth is at least approximately equal to the thickness of said coated teeth including said coating.



4,799,474

MEDICAL TUBE TO BE INSERTED IN BODY CAVITY

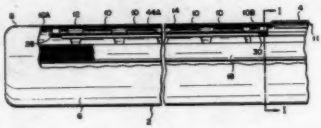
Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Mar. 9, 1987, Ser. No. 23,636

Claims priority, application Japan, Mar. 13, 1986, 61-55853; Jul. 16, 1986, 61-165662; Sep. 2, 1986, 61-206127

Int. Cl.[4] A61B *1/00*; A61M *25/00*

U.S. Cl. 128—4 **16 Claims**



1. A medical tube to be inserted in a body cavity, comprising:

an outer tube having a front section; and

a drive member arranged at said front section, and having an elongated shape memory alloy adapted to have a transformation temperature which is set to be not less than 60° C. such that a memorized shape is restored at a temperature higher than a temperature of heat of 55° C. to 60° C. applied to said shape memory alloy during sterilization of said medical tube.

4,799,475

DEVICE PERMITTING A USER TO SIMULATE CRAWLING MOTIONS TO IMPROVE MOVEMENT OF THE TRUNCAL MUSCLES AND SPINE

John F. Iams, Poway; Robson L. Splane, Jr., Granada Hills, and John A. Drusch, III, Escondido, all of Calif., assignors to Superspine, Inc., Poway, Calif.

Filed Mar. 25, 1986, Ser. No. 844,073

Int. Cl.[4] A61H *1/02*

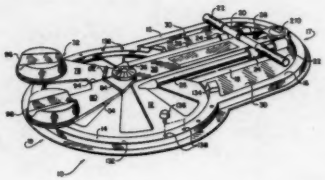
U.S. Cl. 128—25 R **22 Claims**

13. A device for bending the spine of a user kneeling on hands and knees, the device comprising:

a frame;

a stationary rest, fixed to the frame, for holding a one like pair of a kneeling user's hands and knees;

two moving rests, each pivotally mounted to pivot on a circular track on the frame, each for holding a one of the remaining like pair of the kneeling user's hands and knees and for permitting this one of the remaining like pair to move in a substantially level substantially circular arc independently of the other one of the remaining like pair;



wherein the movement in the circular arc of one like pair of the kneeling user's hands and knees while the other like pair is held stationary induces bending of the user's spine.

4,799,476

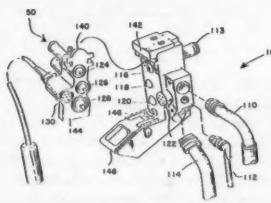
UNIVERSAL LIFE SUPPORT SYSTEM

Michael B. McGrady, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1986, Ser. No. 913,703

Int. Cl.[4] A61B *9/00*

U.S. Cl. 128—202.11 **11 Claims**



6. A universal life support system for use by an occupant of an aircraft, said occupant wearing one of a plurality of distinct ensembles, the ensemble being worn being dependent upon a mission the craft is intended to perform, said system comprising:

a first connector attached to said craft, said first connector including switch means for producing one of a plurality of mission signals;

thermal control means for producing a conditioned ventilation gas, said thermal control means being connected to said first connector means;

anti-g valve means for supplying bleed air to said first connector means in response to acceleration conditions imposed on the craft;

a source of a breathable gas, said source being connected to said first connector means and being responsive to said plurality of mission signals;

a source of electrical power connected to said first connector means; and

a plurality of distinct second connectors that mate with said first connector, each of said distinct second connectors being attached to a distinct one of said plurality of distinct ensembles, each of said second connectors actuating said switch means to produce said one of said mission signals, said one signal corresponding to the mission for which said distinct one of said ensembles is intended to perform, each of said second connectors further being adapted to receive said bleed air, said breathable gas, and said electrical power from said first connector and to communicate said conditioned ventilation gas with said first connector.

4,799,477

REBREATHING MASK

Ralph H. Lewis, 3083 Highway 175, Lakeport, Calif. 95453

Filed Mar. 28, 1988, Ser. No. 172,751
Int. Cl.[4] A62B *18/02*
U.S. Cl. 128—206.24 **3 Claims**

1. A face mask for enclosing the nose and mouth of humans and defining a chamber from and into which a person may inhale and exhale gases comprising:

an inflatable bladder that encircles the chamber;

means for providing a substantially continuous barrier of breathable gas from said bladder, to surround the chamber, said means comprising perforations formed in said bladder and spaced therearound, certain of said perforations being elliptical in shape, the major axis of each elliptical perforation extending generally toward the major axis of adjacent perforations; and

means for introducing a breathable gas into said chamber and said bladder, the breathable gas introduced into said bladder escaping through said perforations to provide said substantially continuous barrier of breathable gas.

4,799,478

DEVICE FOR COAGULATION OF BIOLOGICAL TISSUES

Svyatoslav N. Fedorov, ulitsa Dostoevskogo, 21, kv. 32, Moscow; Sergei V. Krutov, poselok Klyazma, ulitsa Krylovskaya, 6, Moskovskaya oblast; Sergei A. Soloviev, ulitsa Podolskava, 9, kv. 247, Moscow; Olga G. Alexandrova, ulitsa 1812 goda, 1, kv. 139, Moscow, and Nadezhda K. Korshunova, 3 Mikhalkovsky pereulok, 8, korpus 2, kv. 40, Moscow, all of U.S.S.R.

Filed Dec. 3, 1986, Ser. No. 937,317
Claims priority, application U.S.S.R., Dec. 16, 1985, 3990084
Int. Cl.[4] A61B *17/38*
U.S. Cl. 128—303.1 **5 Claims**

1. A device for coagulation of biological tissue which is the object of treatment, comprising:

a casing having a working butt end for facing an object of treatment having biological tissue;

a heating element accommodated in said casing and having a working end protruding outside said working butt end of said casing for introduction into and acting on said biological tissue;

a hollow rod having two butt ends mounted for reciprocation in said casing;

said heating element being rigidly secured to one of said butt ends of said hollow rod;

an electric motor accommodated in said casing;

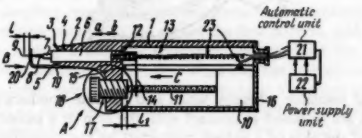
a shaft operatively connected with said electric motor and accommodated in said casing;

a connecting member secured to the other of said butt ends of said hollow rod and operatively connecting said hollow rod to said shaft;

a first limit stop having a dial gage, said first limit stop being mounted on said casing for engaging said connecting member in order to provide a predetermined depth of said introduction of said working end of said heating element;

a second limit stop having one end rigidly secured to said casing and another end coaxially surrounding said working end of said heating element for stabilizing said introduction depth of said working end of said heating element;

an automatic control unit connected to said electric motor



and heating element for automatically controlling the heating temperature of said heating element and the time of said acting on said biological tissue, said automatic control unit having inputs and outputs;

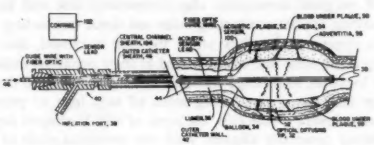
a power supply unit for supplying power to said electric motor for moving said shaft and to said heating element for its heating, the power supply unit having outputs connected to said inputs of said automatic control unit, said outputs of said automatic control unit being connected to an input of said power supply unit, said electric motor and said heating element.

4,799,479

METHOD AND APPARATUS FOR ANGIOPLASTY

J. Richard Spears, Boston, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation of Ser. No. 664,156, Oct. 24, 1984, abandoned.
This application Jan. 8, 1987, Ser. No. 4,780
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—303.1 **65 Claims**



1. A method for preventing abrupt reclosure and restenosis in percutaneous transluminal coronary angioplasty comprising the steps of:

providing a balloon in the coronary artery at the region of coronary narrowing;

inflating the balloon with fluid; and

providing heat at the region surrounding the inflated balloon at a level sufficient to fuse together segments of tissue in said region and to coagulate blood trapped within dissection planes of tissue and within fissures created by wall fracture in said regions, said level being below the vaporization threshold of the tissues; and

deflating and removing said balloon thereby to provide a smooth cylindrically-shaped channel which prevents collapse of material into the coronary artery.

4,799,480

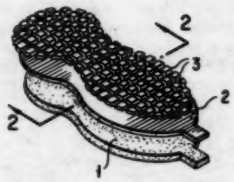
ELECTRODE FOR ELECTROSURGICAL APPARATUS

William W. Abraham, New Hartford, and John S. Gentella, Madison, both of N.Y., assignors to Conmed, Utica, N.Y.

Filed Aug. 4, 1987, Ser. No. 81,154
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.13 **8 Claims**

1. A skin current conducting electrode comprising a conduc-

tive element adapted to be connected to a current generating unit, an insulator having one surface thereof in contact with one entire surface of said conductive element, a plurality of discrete conductive elements disposed on the opposite surface



of said insulator whereby when said discrete conductive elements are disposed in contact with the skin of a patient each area of the skin of a patient contacted by the individual conductive element forms a largely independent current path.

4,799,481

SURGICAL HEMOSTATIC CLIPS

James A. Transue, Somerville; John N. Pyun, Whitehouse Station; Joseph D'Innocencio, Kenilworth; Michael S. Thomas, Somerset, and Arthur A. Gertzman, Bridgewater, all of N.J. assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 8, 1987, Ser. No. 36,037

Int. Cl.[4] A61B *17/12*

U.S. Cl. 128—325 **3 Claims**

3. A surgical hemostatic clip comprising first and second legs having applier contacting sides and tissue contacting sides which oppose each other when the clip is closed, said legs having distal ends and being joined at their proximal ends at a hinge location, said hinge location having a V-shaped depression in said tissue contacting sides of said legs to promote maximal closure of the clip, the apex of said V-shaped depression being generally aligned with the proximal ends of said legs, and the sides of said depression extending substantially linearly outward from said apex of said depression to the surfaces of said tissue contacting sides of said legs,

wherein said tissue contacting sides of said legs exhibit longitudinal grooves extending generally parallel to the longitudinal axes of said legs, said grooves intersecting the sides of said V-shaped depression in the vicinity of said hinge location, and

wherein said longitudinal grooves terminate before their extension to the distal ends of said legs.

4,799,482

STONE DISINTEGRATOR APPARATUS

Syuichi Takayama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1986, Ser. No. 916,714

Claims priority, application Japan, Oct. 18, 1985, 60-233089; Oct. 18, 1985, 60-233090

Int. Cl.[4] A61B *17/22*

U.S. Cl. 128—328 **15 Claims**

1. A stone disintegrator apparatus comprising:

power source means;

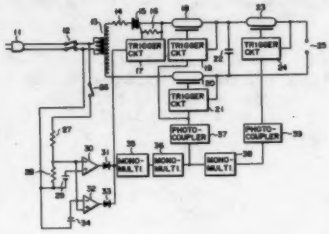
a main capacitor to be charged by power from said power source means;

charging means for charging said main capacitor;

means for discharging said main capacitor;

electrode means coupled to said discharging means for generating an arc discharge on the basis of a charge on said main capacitor so as to disintegrate a stone in an internal organ;

said discharging means including first switching means connected between said main capacitor and the electrode means for, when turned on, selectively leading charges



discharged from said main capacitor to said electrode means;

said charging means including means for isolating said power source means electrically from said discharge means by being off at least during discharge of the main capacitor; and

delay means for turning on said first switching means to pass current therethrough only after lapse of a predetermined time period from when said isolating means turns off to block current therethrough.

4,799,483

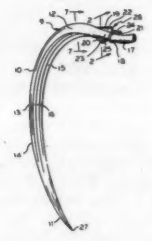
SUTURING NEEDLE WITH TAIL MOUNTED CUTTING BLADE AND METHOD FOR USING SAME

Manus C. Kraff, 5600 W. Addison, Chicago, Ill. 60634

Filed Feb. 11, 1988, Ser. No. 154,985

Int. Cl.[4] A61B *17/06*

U.S. Cl. 128—339 **13 Claims**



1. A curved surgical needle for tissue wound closure, and in particular, suturing tissue together both sides of an incision made in human or animal tissue, having an inner concave surface and an outer convex surface and having suturing material securely attachable thereto, said needle comprising:

a substantially curved body portion having first and second ends;

a point located at said first end of said body portion, for piercing said tissue on opposite sides of said incision and forming an axial passage in said tissue for said suturing material to pass through and thereby draw both sides of said incision together;

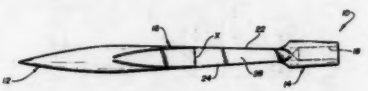
suture attachment means positioned at said second end of said body portion and adapted for receiving, securing and maintaining said suturing material upon said needle;

a tail portion proximate said body portion second end;
an intermediate portion between said point and said tail portion devoid of cutting surfaces; and
said tail portion having cutting edge means projecting radially outwardly therefrom for making at least one radial cut in said tissue extending from said axial passageway so as to facilitate the entry and passage of said suturing material through said tissue.

4,799,484
TAPERED I-BEAM SURGICAL NEEDLES

Daniel J. Smith, Manalapan Township, Monmouth County, and Dennis L. Furman, East Windsor, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 10, 1987, Ser. No. 36,723
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—339 **12 Claims**

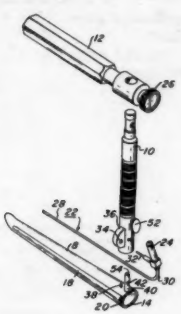


1. A tapered surgical needle comprising a point section, a barrel section, and an intermediate body section joining the point and barrel sections, said point section exhibiting a rounded circumference at its terminus at the body section, said body section exhibiting, over a substantial portion of its length, a tapered region over which the shape of the needle undergoes a gradual transition from a rounded circumference at one end of said tapered region, to a rectangular cross-sectional shape at the other end of said tapered region, and a subregion intermediate said tapered region over which said tapered region exhibits a transition from a generally rectangular cross-sectional shape with four flat sides and rounded corners to a rectangular cross-sectional shape with sharp corners.

4,799,485
NEONATAL SUBGLOTTISCOPE SET

Andrew J. Furey, Philadelphia, and Frederic P. Rosenwald, Churchville, both of Pa., assignors to Pilling Co., Fort Washington, Pa.

Filed Jun. 11, 1987, Ser. No. 61,871
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—11 **7 Claims**

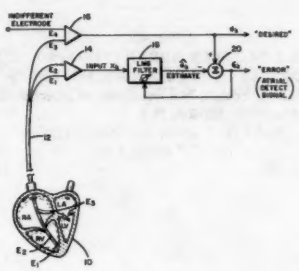


1. A neonatal subglottiscope set for emergency use comprising:
a plurality of elongated hollow tubes of different sizes, each being adapted to enter the larynx of a patient, each having a tubular wall, a central axis, a proximal end and a distal end, and each tube having light carrier passage means extending along its wall for removably receiving a fiberoptic light carrier, said light carrier passage means having an entrance opening adjacent to the proximal end of the tube, in which the radial distance from the entrance opening of the light carrier passage means of each tube to the central axis of the tube is different for each of the tubes;
a handle;
means for rigidly and removably attaching each of the tubes to the handle; and
a substantially rigid fiberoptic light carrier having a first portion adapted to enter the light carrier passage means of each of the tubes, coupling means for attachment of a light source to the light carrier, and a curved portion connecting the first portion to the coupling means;
said coupling means having a pin projecting therefrom in a direction parallel to the axis of the first portion, said handle having a hole for receiving said pin, and the light carrier passage means extending along the wall of each of the tubes having its entrance opening at a position on the wall of the tube such that, when any one of said tubes is connected to the handle by the attaching means, the entrance opening is at a predetermined distance from the hole of the handle and said pin and said entrance opening of said light carrier passage means being spaced at said predetermined distance such that the pin of the light carrier can enter the hole as the light carrier moves into the light carrier passage means.

4,799,486
REFRACTORILESS ATRIAL SENSING IN DUAL CHAMBER PACEMAKERS

Robert A. DuFault, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Mar. 13, 1987, Ser. No. 25,571
Int. Cl.[4] A61N *1/00*; H05G *00/00*
U.S. Cl. 128—419 PG **5 Claims**

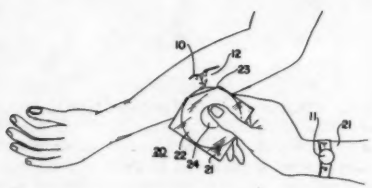


1. In a dual chamber cardiac pacer of the type having first electrode means disposed in the ventricle of the heart for detecting ventricular depolarization signals and second electrode means disposed in the atrium of the heart for primarily detecting atrial depolarization signals, atrial sensing means responsive to the signals on said second electrode means for suppressing those signals on said second electrode means due to said ventricular depolarizing signals comprising:
(a) an adaptive filter coupled to said first electrode means for receiving as an input signal said ventricular depolarizing signal;
(b) a summing circuit coupled to the output of said adaptive filter and to said second electrode means, said summing circuit producing an error signal proportional to the difference between the output of said adaptive filter and the signals on said second electrode means; and
(c) means coupling said error signal to said adaptive filter for continuously varying the parameters of said adaptive filter whereby said filter converges to the point where said error signal is minimized.

4,799,487
REANIMATION DEVICE AND METHOD FOR TREATING THE PARALYZED FACE
Joel N. Bleicher, R.R. #2, Box 70, Council Bluffs, Iowa 51501
Filed May 11, 1987, Ser. No. 48,549
Int. Cl.[4] A61N *1/00*; H05G *00/00*
U.S. Cl. 128—419 R 12 Claims

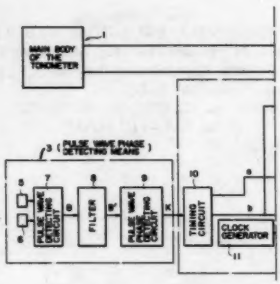
1. A re-animation device for a face paralyzed on one side only, comprising:
means for sensing muscle-stimulation signals from the muscles controlling a specific facial function on the non-paralyzed side of the face, said sensing means being adapted to transmit said signals;
means for receiving said muscle-stimulation signals, said receiving means being adapted to process said signals as needed by the muscles controlling said specific facial function on the paralyzed side of the face and adapted to transmit said processed signals; and
means for stimulating said muscles controlling said specific facial function on the paralyzed side of the face, said stimulating means being adapted to receive said processed signals.

4,799,488
MOVEABLE BLOTTER APPARATUS AND METHOD FOR USE IN BLEEDING-TIME TESTS
Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.
Filed Feb. 1, 1988, Ser. No. 151,067
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—637 10 Claims



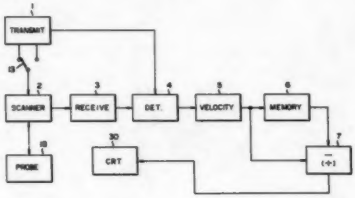
1. Apparatus for use in bleeding-time testing, comprising:
an envelope having an internal hollow and sealed at all sides, with an opening in at least one side,
a blotter member located in said hollow of said envelope and dimensioned so that a peripheral section of said blotter extends from said opening, said envelope having an aperture to enable a user to grasp said blotter member and to move said envelope with respect thereto to enable a different peripheral section of said blotter member to extend from said opening to enable a user to absorb blood from an incision at different peripheral sections of said blotter member with previous blots directed within the internal hollow of said envelope to thereby protect said user from contact with said blotted blood.

4,799,489
TONOMETER
Masayuki Hideshima, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 24, 1987, Ser. No. 124,835
Claims priority, application Japan, Nov. 27, 1986, 61-282476
Int. Cl.[4] A61B *3/16*
U.S. Cl. 128—648 6 Claims



1. A tonometer comprising
eye pressure measuring means including fluid discharging means for discharging a fluid toward an eye to be tested;
pulse wave phase detecting means for detecting a phase cycle of pulse wave due to pulse fluctuation of the eye to be tested;
pulse wave phase area establishing means for establishing whether or not an eye pressure measurement was carried out in any phase area of said pulse wave, according to an output pulse caused by a fluid discharge during the eye pressure measurement and an output of said pulse wave phase detecting means;
recognizing means for recognizing a measured eye pressure value corresponding to a phase area of the eye pressure measuring time according to the output of said pulse wave phase area establishing means.

4,799,490
DOPPLER ULTRASONIC DIAGNOSTIC APPARATUS
Kouroku Namekawa, Tokyo, Japan, assignor to Aloka Co., Ltd., Tokyo, Japan
Filed Mar. 2, 1987, Ser. No. 20,439
Claims priority, application Japan, Mar. 4, 1986, 61-045291; Mar. 4, 1986, 61-045292
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.09 4 Claims



1. A two-dimensional Doppler ultrasonic blood flow display device of the type wherein a velocity of moving reflective members in an organism to be examined is detected by transmitting ultrasonic waves into said organism and comparing a transmitting signal and a received signal, said device comprising:
a transmission circuitry means for producing two ultrasonic

waves having different repetition periods in the same direction and alternately outputting said two ultrasonic waves;

a velocity calculator means for calculating the velocities of the moving reflective members from the respective received Doppler signals of said two ultrasonic waves;

a memory means for storing a first velocity signal obtained by said velocity calculator on the basis of the ultrasonic wave which has been transmitted first in said direction; and

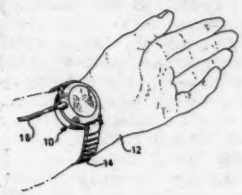
an adder/subtractor means for calculating the difference between a second velocity signal obtained by said velocity calculator means on the basis of the next consecutive ultrasonic wave transmitted in said direction and said first velocity signal, thereby accurately obtaining the velocity of said moving reflective members.

4,799,491

BLOOD PRESSURE MONITORING METHOD AND APPARATUS

Joseph S. Eckerle, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Nov. 6, 1986, Ser. No. 927,843
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—672 **20 Claims**



1. A machine implemented method for determining correct hold-down pressure to be applied to an external pressure transducer that includes a pressure sensitive element applied to a subject at a location overlying an artery, the determined correct hold-down pressure identifying the hold-down pressure to be employed to obtain correct blood pressure measurements using said transducer, said method comprising,

(1) obtaining a continuous measurement of blood pressure with the external pressure transducer while changing the hold-down pressure on the transducer over a range from where the underlying artery is substantially unflattened to where the artery is substantially occluded,

(2) obtaining from the blood pressure measurement of step 1 a set of at least one of the diastolic pressure, systolic pressure, and pulse amplitude values versus hold-down pressure over said range of hold-down pressures,

(3) fitting a polynomial to at least one set of values obtained in step 2,

(4) using the polynomial obtained in step 3, obtaining an indication of the correct hold-down pressure required for accurate blood pressure measurements, and

(5) setting the transducer hold-down pressure at substantially the indicated correct hold-down pressure obtained in step 4 in preparation for obtaining accurate blood pressure measurements from said transducer.

4,799,492

METHOD AND APPARATUS FOR INDIRECT BLOOD PRESSURE MEASUREMENT

Craig H. Nelson, Hillsboro, Oreg., assignor to SpaceLabs, Inc., Bothell, Wash.

Filed Jun. 17, 1986, Ser. No. 875,440
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—672 **21 Claims**

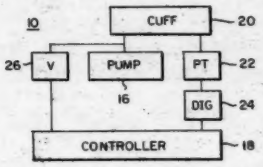
1. In an apparatus for the measurement of blood pressure in which a table of values is generated indicative of blood pressures corresponding to various values of pressure applied to a blood pressure cuff, a system for detecting spurious low values in said table, comprising:

means for comparing each of said values to the smaller of any adjacent values in said table; and

designating said value as spurious if said value is smaller than a predetermined percentage of said smaller adjacent value.

5. In an apparatus for the measurement of blood pressure in which a table of values is generated indicative of the blood pressure corresponding to various values of pressure applied to a blood pressure cuff, a system for detecting spurious high values in said table, comprising:

means for determining the two largest values in said table;



means for determining the difference between the cuff pressures corresponding to said two largest values with the larger of any adjacent value;

means for comparing the largest of said two largest values with the larger of any values adjacent to said largest value; and

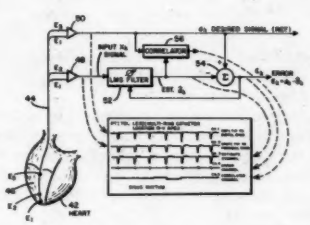
means for detecting as a spurious high value if the cuff pressures corresponding to said two largest values are different from each other by more than a predetermined magnitude and the larger of the values adjacent to said largest value is less than a predetermined percentage of said largest value.

4,799,493

DUAL CHANNEL COHERENT FIBRILLATION DETECTION SYSTEM

Robert A. DuFault, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Mar. 13, 1987, Ser. No. 25,811
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—705 **4 Claims**



1. Cardiac monitoring apparatus for identifying a variety of cardiac arrhythmias comprising:

(a) a first pair of electrodes for sensing cardiac electrical activity at a localized site within a cardiac chamber;

(b) a second pair of electrodes for sensing cardiac electrical activity at a generalized site within said cardiac chamber and producing a reference signal proportional thereto;

(c) variable transfer function LMS adaptive filler means having an input and an output;

(d) means for receiving said reference signal and said output

from said variable transfer function LMS adaptive filter means for developing an error signal proportional to the difference between said reference signal and said output from said variable transfer function LMS adaptive filter means;

(e) means coupling said second pair of electrodes to said input to said variable transfer function LMS adaptive filter means; and correlator

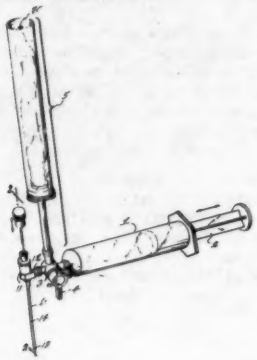
(f) means for comparing the amplitude of the error signal emanating from said variable transfer function LMS adaptive filter means with a predetermined threshold value for discriminating between plural types of tachyarrhythmias and ventricular fibrillation.

4,799,494

PERCUTANEOUS ASPIRATION LUNG BIOPSY NEEDLE ASSEMBLY

Ko P. Wang, 11006 Nacirema La., Stevenson, Md. 21153

Filed Oct. 22, 1986, Ser. No. 921,471
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—753 **9 Claims**



1. A needle assembly for obtaining biopsy tissue from the lung of a patient, said assembly comprising:

(a) an outer hollow needle;

(b) an inner hollow needle retractably disposed within said outer needle such that the tip of the inner needle protrudes from the tip of the outer needle when the inner needle is an extended position, and such that the tip of the inner needle is retracted within the tip of the outer needle in a retracted position,

the outer diameter of the inner needle closely matching the inner diameter of the outer needle;

(c) a stylet engaged with the proximal end of the inner needle, said stylet being of lesser diameter than said inner needle and extending from the proximal end of the inner needle through the length of the outer needle;

(d) means for sealing the proximal end of the outer needle, the stylet extending through said sealing means so as to allow retraction and extension of the inner needle within the outer needle while maintaining the seal; and

(e) means for applying a negative pressure within said outer needle via an opening along the proximal portion thereof.

4,799,495

LOCALIZATION NEEDLE ASSEMBLY

Irwin F. Hawkins; George A. Rafferty, Jr., both of Gainesville; Mark C. Hawkins, and Jeffrey S. Hawkins, both of Micanopy, all of Fla., assignors to National Standard Company, Niles, Mich.

Filed Mar. 20, 1987, Ser. No. 28,609
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—754 **13 Claims**

1. A localization needle assembly for pinpointing lesions within body tissue, including in combination:

an outer tubular cannula member having a distal end and a proximal end with said cannula member having an opening predeterminedly lcoated from said distal end,

an elongated inner needle member having a distal end portion and a proximal end portion, said inner needle member having a pointed tip and anchoring means at its distal end portion, said inner needle member being slidably mounted for movement within said outer cannula member between an extended position and a retracted position, and

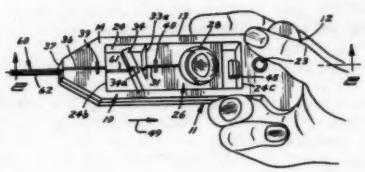
said anchoring means having a mounting portion secured to said distal end portion of said inner needle member and a barb portion contained within said outer cannula member and extending towards said opening in said outer cannula member when said inner needle member is in its extended position and said barb portion moved outward of said outer cannula member through said opening predeterminedly located from the distal end of said outer cannula member to engage body tissue when said inner needle member is moved to its retracted position to lock the needle assembly within the body tissue.

4,799,496

GUIDE WIRE HANDLE

Thomas E. Hargreaves, Mound, and Donald W. Hanson, Chanhassen, both of Minn., assignors to Lake Region Manufacturing Company, Inc., Chaska, Minn.

Filed Jun. 3, 1987, Ser. No. 57,108
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—772 **29 Claims**



1. For manipulating a medical device such as a guide wire or the like and mounting the proximal end portion of a guide wire wherein the guide wire includes a coil spring and a core wire which have distal end portions and the coil spring has a proximal terminal end portion and the core wire has a proximal end portion and an enlarged terminal end joined to the proximal end portion, a manipulator handle that includes a longitudinally elongated main body having a front and a rear end portion, a slide member longitudinally movably mounted on the main body for movement between a datum guide wire relaxed position to a guide wire stiffened rear position, one of the slide member and the main body having a latch member that is resiliently retained in its latching position and is resiliently

movable between a release position and a latching position latchingly engaging the other of the slide member and the main body to retain the slide member in its rear position, the other of the slide member and the main body having a portion to be latchingly engaged by the latch member for retaining the slide member in the slide member rear position, manually movable means joined to the latch member for moving the latch member to its release position, the slide member having coupling means for couplingly engaging the core wire enlarged end and moving the coil wire proximal end portion therewith when the slide member is moved toward the main body rear end portion and the main body having coil spring retaining means for engaging and blocking transverse and rearward movement of the coil spring proximal end portion when the coil spring proximal end portion is engaged thereby and the core wire enlarged end is couplingly engaged by the coupling means.

4,799,497

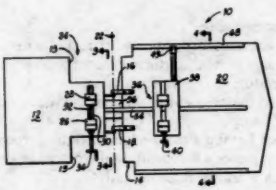
APPARATUS FOR MEASURING KNEE LAXITY

James W. Riley, II, 404 S. Main, Eureka, Ill. 61530

Filed Jan. 16, 1984, Ser. No. 570,864

Int. Cl.[4] A61B 5/00

U.S. Cl. 128—774 10 Claims



1. Am apparatus for measuring knee laxity of a person comprising:

means for fixing a person's knee;

means for applying a force against the person's tibia along an axis substantially parallel to the lateral-medial plane of the tibia, said means for applying force against the person's tibia including:

a support surface,

means for supporting the person's ankle, said supporting means being rollingly mounted on said support surface, and

means for moving said supporting means relative to said surface; and

means for measuring the angular deflection of the tibia when such a force is applied thereto.

4,799,498

APPARATUS FOR DETECTING THE RESONANT FREQUENCY OF A BONE

Richard J. Collier, Canterbury, England, assignor to Kent Scientific and Industrial Project Ltd., both of Kent, England

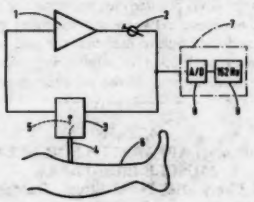
Filed Oct. 29, 1985, Ser. No. 792,470

Claims priority, application United Kingdom, Nov. 1, 1984, 8427602

Int. Cl.[4] A61B 5/10

U.S. Cl. 128—774 11 Claims

1. Apparatus for detecting the resonant frequency of a bone including an electromechanical transducer, said transducer comprising a single probe for application to the external skin surface covering the bone and fixed frequency means for continuously resonating the bone via the probe said transducer being in a feed-back loop circuit with an audio amplifier means and a phase shifter, said audio amplifier means and said phase shifter providing unity gain and a predetermined phase of zero for the loop circuit when said transducer probe is resonating said bone, and a display means connected to receive output



signals from the loop circuit for displaying the bone resonant frequency.

4,799,499

IMPLANTABLE ELECTRODE WITH ACTIVE FIXATION MEANS

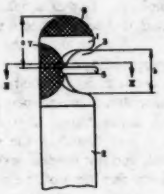
Hans-Jürgen Bisping, Tittardahang 12, 5100 Aachen, Fed. Rep. of Germany

Filed Aug. 8, 1986, Ser. No. 894,877

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529578

Int. Cl.[4] A61N 1/00; H05G 00/00

U.S. Cl. 128—785 17 Claims



1. A catheter lead assembly for intravenous implantation in a selected chamber of the heart of a patient to electrically stimulate the heart from a source of electrical energy, said lead assembly comprising

an electrode head having a longitudinal axis, a surface portion conducive to electrical stimulation of the heart, and a contour concentric with the axis except along a portion indented toward the axis to form a recess in the head, the head being adapted to be positioned with the said surface portion in electrically stimulating relationship with excitable cardiac tissue after introduction into the selected chamber of the heart,

a conductive lead including means fastened to the head for electrically connecting the said surface portion to said energy source to deliver electrical energy to said surface portion, the lead having a biocompatible insulating sheath and being adapted to be inserted intravenously into the heart, and

a rigid hook having a curved portion terminating at one end in means for fastening to the head and at the other end in a tissue-engaging tip, said one end of the hook being secured in fixed relationship to the head, the entire curved portion being configured to lie permanently, without flexing, substantially within the confines of the recess, and the tip being permanently immovable relative to the head and being configured relative to the curved portion of the hook to project slightly from the recess, whereby the lead is adapted to be inserted intravenously for introduction of the head into the selected chamber of the heart without

restraint on any portion of the hook beyond said one end being secured to the head, and the tip is adapted, without further deployment, to engage tissue when the head is rotated about the axis by twisting the lead in the direction in which the tip is pointed, for securing the engaged tissue within the recess between the indented portion of the contour and the hook to maintain the said surface portion of the head positioned in stimulating relationship with excitable cardiac tissue in the selected chamber.

4,799,500

METHOD OF AND APPARATUS FOR TREATMENT OF MUSCLE IMBALANCE

Renton D. Newbury, 108 David Street, Dandenong, Victoria 3175, Australia

Filed Sep. 30, 1986, Ser. No. 913,444
Claims priority, application Australia, Sep. 17, 1986, PH9081
Int. Cl.[4] A61F 5/56
U.S. Cl. 128—859 5 Claims

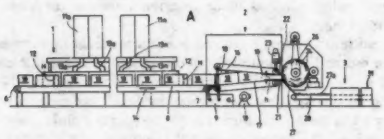
1. A splint for the lower jaw of a patient to prevent interlocking interdigitation of the molar teeth thereby allowing the muscles supporting the jaws to move the lower jaw in a preferred path, said splint comprising two arms and a bridge interconnecting the arms, each arm being generally U-shaped in transverse section with a dome-shaped central section separating two sides, the dome-shaped central section defining a contact surface for at least some of the molar teeth and the second premolar teeth and not for the first premolar teeth, the incisor teeth and the canine teeth of the upper jaw, the dome-shaped central section having a thickness to provide a selected spacing between the molar teeth of the upper and lower jaws, and the dome-shaped central section being formed so that there is point contact between each molar tooth of the upper jaw and the contact surface.

4,799,501

METHOD AND APPARATUS FOR MAKING TOBACCO SHREDS

Reinhard Liebe, Hamburg, and Waldemar Wochnowski, Hamburg-Meiendorf, both of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Feb. 2, 1987, Ser. No. 9,474
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1986, 3603193
Int. Cl.[4] A24B 3/18
U.S. Cl. 131—299 28 Claims



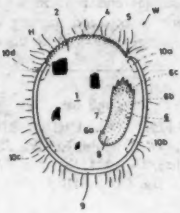
1. A method of transforming bodies of relatively dry compressed tobacco into shreds, comprising the steps of dielectrically heating the bodies; and directly converting the heated bodies into shreds without increasing the moisture content of tobacco subsequent to the heating and prior to the converting step.

4,799,502

WIG

Hisao Kobayashi, and Kousuke Mochizuki, both of Tokyo, Japan, assignors to Aderans Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,772
Claims priority, application Japan, Dec. 24, 1985, 60-197535[U]; Feb. 17, 1986, 61-21873[U]
Int. Cl.[4] A41G 3/00
U.S. Cl. 132—53 19 Claims



1. A wig comprising:

a wig base substantially entirely formed of a network having a convexly curved surface in conformity with a user's head contour;

hairs planted over the entire said convexly curved surface of said wig base;

said network having a front edge portion corresponding to a hairline at a user's forehead, said front edge portion being formed in a zigzag fashion; and

filament means stitched through said wig base at a location slightly behind said front edge portion, wherein

the network which forms the wig base defines a cut-out portion which corresponds to a location for forming a hair whirl, and wherein

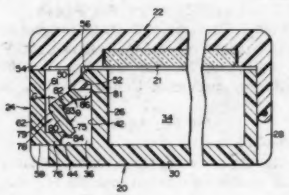
said wig further includes an artificial skin which closes the cut-out portion of the network, said artificial skin being made of a sheet of flexible plastic and being substantially the same shape as the cut-out portion.

4,799,503

COMPACT COSMETIC CASE

Tomio Tahara, Tokyo, Japan, assignor to Kamaya Kagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1987, Ser. No. 82,657
Claims priority, application Japan, Oct. 14, 1986, 61-157215; Jul. 3, 1987, 62-102403
Int. Cl.[4] A45D 33/00, 40/00, 40/22
U.S. Cl. 220—260 8 Claims



1. A compact cosmetic case comprising:

a case body having bottom and peripheral walls defining a hollow in the case body, the peripheral wall having front and rear portions, the front portion having top and front

faces and provided with a recess opening to both the top and front faces of the front portion, the recess having bottom and end surfaces, the end surface extending between the bottom surface of the recess and the top face of the front portion, the end surface of the recess having a first engaging member projecting therefrom;

a lid having an inner face and pivotally connected to the rear portion of the peripheral wall of the case body for opening and closing the hollow of the case body, the lid having a second engaging member disposed on the inner face of the lid, for engaging with the first engaging member of the case body so that the lid is fastened to the front portion of the peripheral wall of the case body when the lid is in its closed position; and

disengaging means received in the recess of the case body, for disengaging the first and second engaging members so that the lid is unfastened from the front portion of the peripheral wall of the case body, the disengaging means including: a sliding plate having inner surface, inner surface facing the end surface of the recess, said sliding plate having a lower edge and a ridge formed along said lower edge, the sliding plate being movable between outer and inner positions toward and away from the end surface of the recess; a hook-like resilient urging leaf interposed between the inner surface of the sliding plate and the end surface of the recess, for pushing the second engaging member upward so as to disengage the first and second engaging members, the urging leaf urging the sliding plate in its outer position away from the end surface of the recess; and a resilient strip disposed along the ridge of the sliding plate and interconnecting the ridge and the urging leaf, the urging leaf comprising:

a first leaf piece having upper and lower edges, the lower edge being connected to the ridge of the sliding plate by the resilient strip, the upper edge being spaced apart from the inner surface of the sliding plate by a clearance when the sliding plate is in its outer position, the first leaf piece having a larger thickness than the resilient strip; and

a second leaf piece having proximal and distal edges, the distal edge being in contact with the end surface of the recess, the proximal edge being connected to the upper edge of the first leaf piece so that the second leaf piece is inclined at an angle less than 180° with respect to the first leaf piece, the second leaf piece having a thickness substantially equal to the thickness of the first leaf piece, the distal edge of the second leaf piece being disposed at a level below the first engaging member when the sliding plate is in its outer position, the urging leaf being bent, when the sliding plate is brought into its inner position, in such a manner that the angle between the first and second leaf pieces is enlarged and then the distal edge of the second leaf piece is brought to a level generally equal to the first engaging member, the second leaf piece having a notch formed in the distal edge thereof for preventing the distal edge from butting against the first engaging member when the distal edge is brought to the level generally equal to the first engaging member.

4,799,504

TANK CONSTRUCTIONS FOR CONTAINING FUEL, AND WATER SEPARATORS FOR FUEL FEED SYSTEMS

Edgar P. Scragg, and John E. Scragg, both of 60 Mulder St., Florida Park Extension 3, Florida, Transvaal Province, South Africa

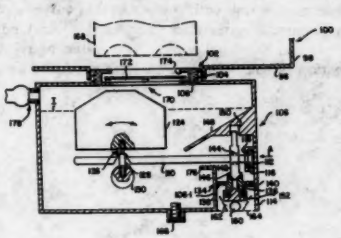
Filed Jan. 12, 1987, Ser. No. 2,282

Claims priority, application South Africa, Jan. 17, 1986, 86/0378; Aug. 5, 1986, 86/5881

Int. Cl.[4] F16K *31/24*

U.S. Cl. 137—38 **7 Claims**

1. A fuel tank construction comprising a tank and a sump secured to the underside of the tank, an outlet from the sump, a float in the sump the specific gravity of which is such that it sinks in fuel but floats on any water which has accumulated in the sump, first normally closed valve which controls flow through said outlet and which opens upon the float detecting an increasing water level in the sump, and a second valve for controlling flow through said outlet which second valve is



normally open and which is gravitationally biassed to its open position but which moves under gravitational forces to a closed position upon the tank construction being tilted sufficiently or inverted.

4,799,505

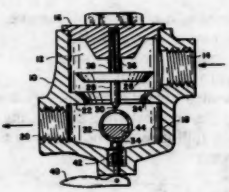
EARTHQUAKE TRIGGERED GAS VALVE

Homer Nowell, 1311 Breckenridge St., San Leandro, Calif. 94579

Filed May 20, 1988, Ser. No. 196,602

Int. Cl.[4] F16K *17/36*

U.S. Cl. 137—38 **9 Claims**



1. A gas valve automatically closed from a normally open position by a shock, said gas valve comprising:

a housing having having a gas inlet chamber and outlet chamber, said chambers being separated by a partition, said outlet chamber having a floor;

a valve seat in an opening in said partition;

a valve member mounted on a valve rod passing through the center of the valve seat opening and having a first end terminating in said outlet chamber, said valve member positioned to engage said valve seat to seal the opening between said inlet and outlet chambers; and

a hollow ball positioned between the floor of said outlet chamber and the first end of said valve rod for forcing said valve member out of said valve seat and to open the gas valve, said hollow ball containing a fluid having an inertia that will oppose a shock produced movement of said housing.

4,799,506

ADJUSTABLE SAFETY RELIEF VALVE

Wesley L. Taylor, 7417 NW. 19th St., Bethany, Okla. 73008

Continuation of Ser. No. 52,685, May 20, 1987, abandoned, which is a continuation of Ser. No. 800,992, Nov. 22, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 148,080

Int. Cl.[4] F16K *17/06*

U.S. Cl. 137—469 **15 Claims**

1. An adjustable pressure relief valve comprising:

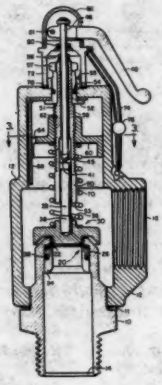
(a) a valve body having an inlet and an outlet,

(b) a valve seat associated with said inlet,

(c) a valve member configured to seal off the flow of fluids through said valve at said valve seat,

(d) an adjustment screw supported in said valve body to allow rotational but not longitudinal movement of said adjustment screw with respect to said valve body,

(e) a compression member connected to said adjustment screw and mounted within said valve body such that rotation of said adjustment screw produces longitudinal



movement of said compression member with respect to said adjustment screw, and

(f) a resilient member biased between said compression member and said valve member;

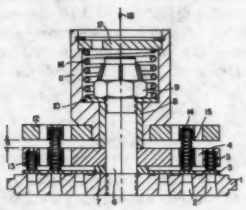
(g) said adjustment screw extending sufficiently close to said valve member and including an abutting section adapted to provide a full-open stop position to limit the lift of said valve member.

4,799,507

ADJUSTABLE COMPRESSOR VALVE WHICH CAN ACCOMMODATE CHANGING OPERATING CONDITIONS IN THE COMPRESSOR TO WHICH IT IS ATTACHED

Hans Hrabal, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Apr. 8, 1987, Ser. No. 35,927
Claims priority, application Austria, Apr. 16, 1986, 994/86
Int. Cl.[4] F16K *15/08*
U.S. Cl. 137—516.21 9 Claims



1. A compressor valve for a compressor through which a gaseous medium flows, said compressor valve comprising

a valve seat having opposite first and second sides and flow channels which extend therethrough from said first side to said second side, flow of gaseous medium passing through said flow channels from said first side of said valve seat to said second side,

a spring plate which is positioned in register with one of said first and second sides of said valve seat and is adjustably spaced therefrom,

a plug positioned between said spring plate and said valve seat, said plug being movable against said valve seat to block the flow channels therein or movable away from said valve seat to unblock said flow channels therein,

a catch positioned between said spring plate and said plug, said catch including connecting channels therein,

first spring means extending between said catch and said plug, and

second spring means extending between said spring plate and said plug,

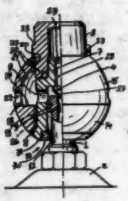
the positioning of said spring plate relative to said valve seat determining the total spring force pushing said plug against said valve seat to thus accommodate the rotational speed of the compressor to which the compressor valve is attached and the specific weight of the gaseous medium passing therethrough.

4,799,508

PRESSURE REGULATING VALVE FOR PRESURE COOKER

Francesco Cuminale, Santo Andre, Brazil, assignor to Alcan Aluminio Do Brasil, S.A., Sao Paulo, Brazil

Continuation-in-part of Ser. No. 928,674, Nov. 7, 1986, which is a continuation of Ser. No. 758,095, Jul. 23, 1985, abandoned.
This application Aug. 3, 1987, Ser. No. 81,155
Int. Cl.[4] F16K *15/00*
U.S. Cl. 137—534 6 Claims

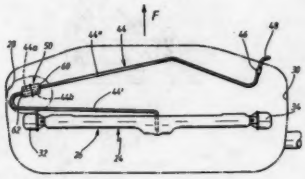


1. A pressure regulating valve for a pressure cooker comprising a tubular projection extending from the pressure cooker lid, and on the upper outlet of which is poised a needle, located inside a piece shaped as an inverted cup, inside which said tubular projection is housed, said inverted cup-shaped body having an upper threaded projection in which the head is screwed, said inverted cup-shaped body including steam escape openings and a lower downward turned aperture, surrounded by an internal flange and external ferrule, on which a first weight rests and on this latter a second weight, the weights being placed around the inverted cup-shaped body and the upper head, said weights being selectively used according to the working pressure desired for the cooker, characterized in that the bottom weight and top weight consist of ring pieces set around the inverted cup-shaped body, said weights having a frustum-spherical shape, forming as a whole a spherical valve body, said inverted cup-shaped body being internally provided with a plurality of regularly spaced longitudinal ribs which define longitudinal intermediate channels along which part of the steam escaping from a circumferential passage defined between a top opening of the tubualr projection and a needle circulates downwardly; and in which, at the bottom of said intermediate channels there are corresponding steam escape openings radially arranged on the inverted cup-shaped body and placed at a level above the upper surface of the bottom weight.

4,799,509
VENTING ARRANGEMENT FOR FUEL TANKS OF MOTOR VEHICLES

Helmut Wawra, Korb; Dieter Scheurenbrand, Wolfschlugen, and Wolfgang Kleineberg, Altbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 95,780
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1986, 3631720; Jun. 13, 1987, 3719834
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—587 19 Claims



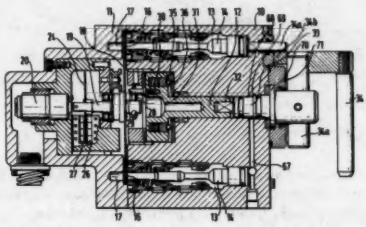
1. A fuel tank arrangement for motor vehicles comprising:
a fuel tank,
expansion tank means disposed above the maximum fuel level in the fuel tank during normal vehicle upright driving conditions and operatively connected with the interior of the fuel tank;
expansion line means for venting the expansion tank means to the atmosphere, said expansion line means including first and second line sections, said first line section extending substantially horizontally from the expansion tank means to a position adjacent the plane of a first fuel tank side wall, said second line section adjoining the first line section and having a discharge to the atmosphere, said expansion line means being operable in an inverted position of the fuel tank to prevent flow-out of fuel;
and an enlargement means in said expansion line means, said enlargement means including entrapment means for entrapping a predetermined gaseous volume during overturning of the fuel tank and siphoning means with fuel flow interruption means operable such that outflow of fuel through the discharge of the second line section to atmosphere effects a suction of a portion of the gaseous volume into the second line section downstream of the enlargement means and an automatic interruption of the fuel siphoning action and stoppage of fuel flow out the discharge.

4,799,510
VALVE FOR USE IN CONTROLLING THE FUNCTIONS OF MINE ROOF SUPPORTS

Richard Ward, Manchester, England, assignor to Gullick Dobson Limited, Wigan, England

Filed Mar. 30, 1987, Ser. No. 31,956
Claims priority, application United Kingdom, Apr. 3, 1986, 8608176
Int. Cl.[4] F15B *13/06*
U.S. Cl. 137—596.15 16 Claims

1. A valve for use in controlling a plurality of fluid operated functions, said valve comprising:
a plurality of valve means each including a valve member, valve seat means and valve port means for carrying out a fluid control function, each said valve means being movable independently along a respective first path from an inoperative position to an operative position by fluid pressure;
fluid supply means for supplying fluid simultaneously to all of said valve means;
interposer means for permitting at least one said valve means to move along said first path from said inoperative position to said operative position in response to a supply of fluid from said fluid supply means while at the same time preventing the remaining valve means from moving to said operative position, said interposer means being movable along a second path which intersects each of said first paths of said valve means; and
valve member receiving space for receiving at least one of said valve members upon movement of said valve members along said first path and through said second path, said valve member receiving space being disposed on one side of said second path, each said valve member in said inoperative position being disposed on the other side of said second path to said valve member receiving space, thereby enabling said valve means to be selectively operable.



4,799,511
FLOW SYSTEM OF STATIC PARAMETERS

Naum Azimov, 300 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Oct. 2, 1981, Ser. No. 308,034
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—613 9 Claims

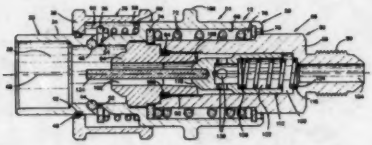
1. A flow system of static parameters comprising:
a. a supply means for introducing a fluid or gas at an unregulated rate of flow and an unregulated pressure Po into said system;
b. a conduit means for channeling the flow of said fluid or gas through said system;
c. a downstream pressure regulating means to establish and maintain a constant initial conduit line pressure P1 continuously;
d. a plurality of downstream pressure regulating means located in upstream relation to said downstream pressure regulator which maintains said initial constant pressure P1, to buffer and preserve said initial constant pressure P1 from fluctuations in said pressure Po;
e. a plurality of sensing means integrally connected to said conduit means and operatively responsive to changes in flow rates and pressures generated therein;
f. a means to regulate the flow of said fluid or gas;
g. an upstream pressure regulating means to establish and continuously maintain a second constant conduit pressure P2 located in downstream relation to said flow regulating means;
h. a plurality of upstream pressure regulating means located in downstream relation to said upstream pressure regulator which maintains said second constant conduit line pressure P2 to buffer and preserve said second pressure from fluctuations in discharge line pressures; and
i. a discharge means capable of dispensing said fluid or gas.

4,799,512

COUPLING ASSEMBLY

Charles R. Sarson, Willoughby Hills, Ohio, assignor to Tuthill Corporation, Cleveland, Ohio

Filed Nov. 12, 1987, Ser. No. 119,853
Int. Cl.[4] F16L 37/28
U.S. Cl. 137—614.04 11 Claims



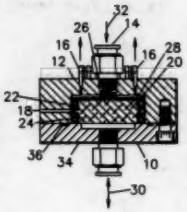
1. A coupling assembly for use in connecting a pair of conduits in fluid communication, said coupling assembly comprising a plug assembly, said plug assembly including a plug body having a leading end portion and a trailing end portion adapted to be connected with one of the conduits, a plug valve assembly disposed in said plug body, said plug valve assembly being operable between a closed condition blocking fluid flow through said plug body and an open condition in which said plug valve assembly is ineffective to block fluid flow through said plug body, and a socket assembly having a socket chamber which receives said leading end portion of said plug body, said socket assembly including a socket body in which said socket chamber is at least partially disposed, a movable locking element disposed on said socket body, said locking element being movable between a disengaged condition and an engaged condition in which said locking element is engageable with said plug body to hold said plug body against movement relative to said socket body, a locking sleeve extending around and movable relative to an outer side surface of said socket body, said locking sleeve being movable relative to the outer side surface of said socket body between a first position in which said locking element is in the engaged condition and a second position in which said locking element is in the disengaged condition, a socket valve assembly at least partially disposed in and movable relative to said socket body, said socket valve assembly including a socket valve body having an outer end portion adapted to be connected with one of the conduits and in inner end portion disposed in said socket body, said socket valve body being movable relative to said socket body between first and second positions, socket valve body spring means for urging said socket valve body toward the first position, a socket valve member disposed in said socket valve body, a socket valve seat disposed in said socket valve body, said socket valve member being movable relative to said socket valve body between an open position in which said socket valve member is spaced from said socket valve seat and a closed position in which said socket valve member is disposed in engagement with said socket valve seat, and socket valve spring means disposed in said socket valve body for urging said socket valve member toward its closed position, said leading end portion of said plug body including surface means for applying force against said inner end portion of said socket valve body to move said socket valve body relative to said socket body from the first position to the second position against the influence of said socket valve body spring means and to form a fluid tight seal between said leading end portion of said plug body and said inner end portion of said socket valve body during insertion of said leading end portion of said plug body into said socket chamber, said plug and socket valve assemblies including means for operating said plug valve assembly from the closed condition to the open condition during insertion of said leading end portion of said plug body into said socket chamber and for moving said socket valve member from its closed position to its open position during insertion of said leading end portion of said plug body into said socket chamber.

4,799,513

MULTI-PORT VALVE

Michael R. Strong, Midland; James C. Sell, Jr., Saginaw, and David J. Cimbalik, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 5, 1988, Ser. No. 152,511
Int. Cl.[4] F16K 11/04
U.S. Cl. 137—625.48 6 Claims



1. A valve capable of rapidly simultaneously closing a multiplicity of ports tightly enough to assure the absence of any leakage through the valve comprising

a stationary exterior structure enclosing a cavity,

a movable means located within said cavity, movable from a valve open position to a valve closed position and forming a chamber within said cavity,

a plurality of outlet ports and at least one inlet port extending through a surface of said exterior structure,

a resilient surface on said movable means adapted to tightly close said ports when said movable means travels to the closed position,

seal means to prevent flow of fluid from said chamber to the remainder of said cavity,

means urging said movable element toward a valve open position,

means comprising a fluid under high pressure for moving said movable means to a valve closed position, and,

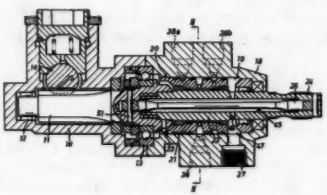
means for turning off the supply of said high pressure to return said valve to the open position.

4,799,514

ROTARY SERVOVALVE FOR POWER-ASSISTED STEERING SYSTEM

Tsuneo Tanaka, and Katsuhisa Mori, both of Okazaki, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 25, 1988, Ser. No. 173,613
Claims priority, application Japan, Mar. 26, 1987, 62-72850
Int. Cl.[4] F15B 9/10; F16K 11/00
U.S. Cl. 137—625.23 2 Claims



1. A rotary servovalve adapted for use in combination with a hydraulic power cylinder of a power-assisted steering system, comprising:

a valve sleeve formed in a peripheral wall thereof with a supply port for connection to a source of fluid under pressure and distribution ports respectively for connection

to opposite fluid chambers of said power cylinder, said valve sleeve being formed at the inner periphery thereof with circumferentially spaced sleeve channels respectively in open communication with said supply and distribution ports; and

a valve rotor coupled within said valve sleeve for relative rotation thereto, said valve rotor being formed thereon with circumferentially spaced control lands which are arranged to correspond with said sleeve channels when the servovalve is in a neutral position;

wherein said control lands corresponding with said sleeve channels in open communication with said distribution ports are each formed larger in width than said corresponding sleeve channel and smaller in height than said control land corresponding with said sleeve channel in open communication with said supply port to define a predetermined clearance for restricting the flow of fluid discharged from one of said distribution ports and supplied into the other distribution port when the servovalve is in the neutral position.

4,799,515

WOVEN SLIDE FASTENER STRINGER

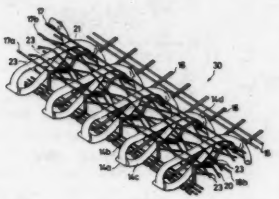
Masaatsu Ohfusa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 28, 1987, Ser. No. 138,362

Claims priority, application Japan, Dec. 27, 1986, 61-199532[U]

Int. Cl.[4] A44B *19/40*

U.S. Cl. 139—384 B **3 Claims**



1. A woven slide fastener stringer comprising:

(a) a tape woven of a plurality of foundation warp threads and a foundation weft thread and having a filament woven section defining a longitudinal edge portion;

(b) a continuous coil-shaped synthetic resin filament having a row of successive loops, each of said loops having a coupling head at one end thereof, upper and lower legs extending from the head in a common direction, and a heel portion remote from said coupling head and connecting said upper leg of each said loop and said lower leg of the next loop;

(c) a group of upper binding warp threads extending in parallel longitudinally of said tape and overlying said upper legs of said filament loops and interwoven with said foundation weft thread, and a group of lower binding warp threads extending in parallel longitudinally of said tape and underlying said lower legs of said filament loops and interwoven with said foundation weft thread, both said groups of binding warp threads running as a whole substantially along a straight path at the region which extends substantially from the midpoint of each of said upper and lower legs to said heel portions;

(d) a plurality of loop-clamping warp threads extending between said upper and lower binding warp threads and alternately overlying said upper legs and said foundation weft thread and underlying said lower legs and said foundation weft thread at every other adjacent loops;

(e) a gap-filling warp thread disposed between an outermost one of said upper binding warp threads and the next upper binding warp thread and also between an outermost one of said lower binding warp threads and the next lower binding warp thread and extending under said lower legs of said filament loops and alternately over and under said foundation weft thread so as to pull portions of said foundation weft thread between the outermost upper binding warp threads and the next upper binding warp thread toward a lower side of said tape substantially halfway between said upper and lower legs of the respective loops; and

(f) a pair of space-retaining warp threads disposed between the outermost upper binding warp thread and the next upper binding warp thread and also between the outermost lower binding warp thread and the next lower binding warp thread and extending alternately over said upper leg of one of said filament loops and said foundation weft thread and under said lower leg of the next filament loop and said foundation weft thread so as to clamp said filament loops.

4,799,516

WEFF YARN FEED FOR A WEAVING LOOM

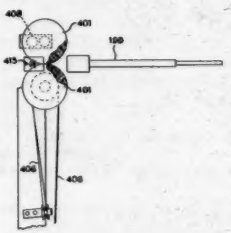
John D. Griffith, Boldon, England, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 848,921, Apr. 7, 1986, Pat. No. 4,706,716, which is a division of Ser. No. 618,046, Jun. 7, 1984, abandoned. This application Jul. 10, 1987, Ser. No. 72,152

Claims priority, application United Kingdom, Jun. 7, 1984, 618046

Int. Cl.[4] D03D *47/36*

U.S. Cl. 139—435 **5 Claims**

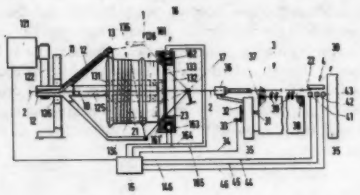


1. A method of inserting weft yarn in a fluid jet loom having a main nozzle for inserting weft yarn into the warp shed, a pair of nip rollers located immediately upstream of the main nozzle and weft yarn guide means immediately upstream of the nip rollers, the guide means being movable to selectively introduce the weft yarn between the rollers for positively feeding the weft yarn to the main nozzle, wherein at the beginning of weft yarn insertion the guide means guides yarn directly to the nozzle and the nozzle is operated to accelerate the weft yarn and thereby activate insertion, the guide means is then operated to feed the yarn to the pair of nip rollers which causes the yarn to be inserted at a speed in excess of that dictated by the nozzle, the guide means is then operated at a predetermined time to disengage the yarn from the nip rollers causing the yarn to declerate to the speed of insertion dictated by the nozzle, and the nozzle is subsequently deactivated to complete the weft yarn insertion cycle.

4,799,517
WEFT YARN STORE FOR A LOOM

Robert Bucher, Frick, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 22, 1987, Ser. No. 41,097
Claims priority, application Switzerland, Apr. 29, 1986, 01754/86
Int. Cl.[4] D03D *47/36*
U.S. Cl. 139—452 17 Claims



1. A method of operating a weft yarn store for feeding weft yarn for picking into a loom, the weft yarn being drawn off a package and, through the agency of a first winder, being received for intermediate storage on a drum in the form of a number of turns in a first winding zone as a first supply and being transferable by means of a second winder into a second supply in a second winding zone, characterized in that the rate of yarn removal from the first supply is reduced in accordance with a predetermined programme before the end of picking.

4,799,518
MACHINE FOR SEQUENTIAL MANUFACTURE OF INCANDESCENT LAMP FILAMENTS

Joachim Haug, Herbrechtingen, Fed. Rep. of Germany, assignor to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 15, 1987, Ser. No. 96,938
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1986, 3632262
Int. Cl.[4] B21F *3/04*
U.S. Cl. 140—71.5 26 Claims

1. Machine for sequential manufacture of incandescent lamp filaments, in which a filament wire (2) is wrapped around a core wire (4) to form spiral filament sections (6);

said machine having

a frame (F);

means for supplying the filament wire;

a rotatable winding head (1) guiding the filament wire to the core wire (4) and wrapping the filament wire (2) about the core wire;

a core wire guide nozzle (3) maintaining the core wire on the axis of rotation of the winding head;

means for moving the core wire (4) axially through the winding head in a predetermined direction with essentially uniform speed; and

means for forming essentially straight axially extending separating zones (5) of filament wire (2) between two sequential wrapped filament sections (6) comprising

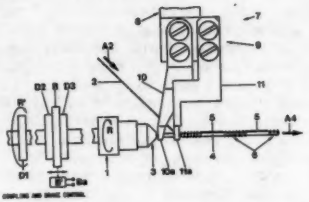
a pincer system (7) having two jaw means (8, 8*a*, 8*b*), each formed with end portions (9) movable essentially along said axis;

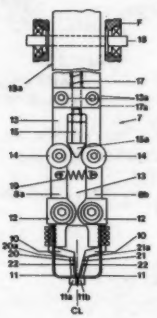
said core wire guide nozzle (3) guiding the core wire (4) between the end portions (9) of the jaw means;

operating means (14–19) coupled to said jaw means for selectively closing the end portions of the jaw means against the core wire, and opening the end portions of the jaw means for spacing them from the core wire; and

wherein said pincer system (7) comprises

a shaft (18) spaced by a distance from the core wire (4) which distance is large with respect to the length of said separating zones (5) said shaft pivotably supporting the jaw means (8) on the frame about an axis of rotation substantially perpendicular to the axis of the winding head, said end portions, upon closing against the core wire, being carried along by the core wire; and



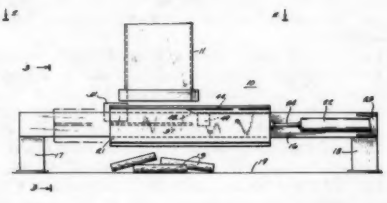


wherein the end portion (9) of each jaw means (8) of the pincer system (7) comprise two arms (10, 11) relatively positioned longitudinally along the core wire (4).

4,799,519
WOOD SPLITTER

Curtis E. Forbes, N8346 State Highway 73, Randolph, Wis. 53956; Micheal M. Forbes, 406 W. James St., Columbus, Wis. 53925, and William L. Forbes, 60 E. Cedar St., Platville, Wis. 53818

Filed May 19, 1988, Ser. No. 195,799
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—366 8 Claims



1. A wood splitting machine comprising:

longitudinally extending laterally spaced apart stationary guide members,

support members mounted on said guide members for advancing and retracting in opposite longitudinal directions,

motive means operative to advance and retract said support members,

blade support means mounted to said support members for moving therewith,

a blade assembly mounted to said blade support means, said assembly including a primary blade having a laterally extending cutting edge for splitting a wood block in a horizontal plane and a plurality of laterally spaced apart secondary blades having cutting edges extending generally vertically below said primary blade for splitting said wood block vertically,

carriage means mounted to said support members such that said carriage means is advanced and retracted jointly with said blade support means in response to operation of said motive means, said carriage means including a generally horizontal plate means having a trailing end adjacent said blade assembly, said plate supporting pieces of wood that are to be split, and

stop means fixed over said plate means of said carriage in a position remote from said blade assembly when said assembly is retracted so that a block of wood deposited on said top plate means will be captured between said blade assembly and said stop means when said blade assembly is advanced to split said wood, said carriage being simultaneously advanced to remove the carriage plate from under said wood to allow the split pieces of wood to drop down below said carriage.

8. A method of splitting wood blocks comprising the steps of:

disposing one or more wood blocks on a horizontal carriage such that the block or blocks are between a fixed stop positioned above the plane of the carriage and the blade assembly including a horizontal blade whose cutting edge faces said wood and a plurality of vertical blades whose cutting edges face said wood,

next advancing said blades through the wood to split and suspend the wood while concurrently shifting the carriage plate out from under the wood so the wood can drop down when it is split, and then

retracting said carriage plate and blade assembly together.

4,799,520

COVER FOR CHRISTMAS TREES

James H. Blackburn, and Maureen T. Blackburn, both of 101 Chantilly, West Monroe, La. 71291

Filed Dec. 28, 1987, Ser. No. 138,055

Int. Cl.[4] B65D *81/00*

U.S. Cl. 150—52 R **19 Claims**

1. A cover for a Christmas tree comprising a sheath having a selected configuration; an opening provided in said sheath for receiving the trunk of the Christmas tree; a center drawstring provided in said sheath adjacent said opening for tightening said sheath around the trunk; a perimeter drawstring provided in the perimeter of said sheath for selectively closing said sheath over the top of the Christmas tree and substantially encapsulating the Christmas tree inside said sheath; and at least one radial drawstring provided in said sheath between said opening and said perimeter, with one end of said radial drawstring anchored to said sheath, whereby said sheath may be disposed beneath the Christmas tree as a decorative member responsive to manipulation of said radial drawstring and said sheath.

4,799,521

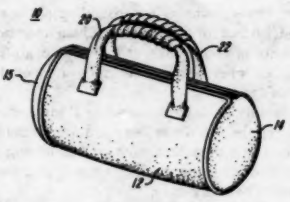
HANDLE FOR BAG

Lawrence A. Shick, Waquoit, Mass., assignor to Lifestyle International, Inc., Randolph, Mass.

Filed Nov. 12, 1987, Ser. No. 119,548

Int. Cl.[4] B65D *25/28*; A45C *11/32*

U.S. Cl. 150—107 **9 Claims**



1. A handle for a bag, comprising:

A. an elongated flexible sheet member having an attachment region at each of its distal ends adapted for attachment to said bag, and having an elongated, substantially rectangular intermediate region disposed midway between said attachment regions,

B. a welting member including an elongated sheet of relatively highly compressible and resilient material disposed adjacent to said intermediate region,

wherein said intermediate region is folded along its long principal axis with its long sides being mutually joined at a seam, and wherein said welting member is disposed between the two halves of said intermediate region on either side of said principal axis, and further comprising a plurality of seams joining opposing portions of said two halves along a corresponding plurality of substantially parallel axes extending transverse to said principal axis, said transverse axes being substantially equally spaced in the direction of said principal axis by a distance D, whereby said folded, seamed intermediate region and said welting member form an articulated grip portion.

4,799,522

SNOW CHAIN FOR VEHICLE WHEELS

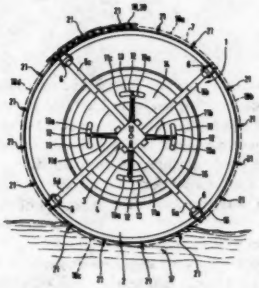
Bengt E. Ilon, Lucerne, Switzerland, assignor to Autotyp S.A., Etagnieres, Switzerland

Filed Dec. 4, 1986, Ser. No. 938,160

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545529

Int. Cl.[4] B60C *27/20*

U.S. Cl. 152—213 R **5 Claims**



1. A snow chain for vehicle wheels comprising:

(a) a plurality of arms, each arm having a first end mounted to a center member, each arm extending radially outward from the center member to a second end;

(b) means for retracting the arms to a position adjacent an end side of a vehicle wheel;

(c) a plurality of yokes, each yoke having a first end connected to the second end of an arm, and each yoke also having a second end with means for joining chain sections, each chain section extending between two yokes; and

(d) a pluralityof chain sections, each chain section comprising:

(1) two chain members for extending along a peripheral tread surface of a tire, each chain member having a pluarlity of chain links, at least one chain link of each chain member being detachable connected to at least one of the yokes;

(2) a plurality of tie bars extending along a transverse axis between the chain members and nonrotatably mounted to the chain members, each tie bar having a clamping portion comprising an edgeways open recess disposed between two members;

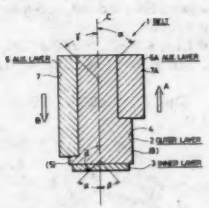
wherein two substantially parallel extending portions of a chain link are disposed within the open recess, one link portion engaging a bottom of the recess while the opposed chain link portion engages the two end members bent toward each other on the outside of the outermost chain link portions in the recess so a chain link of each chain member is non-rotatably connected to each tie bar.

4,799,523

PNEUMATIC RADIAL TIRE FOR MOTOCROSS

Junichi Kawajiri, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 5, 1987, Ser. No. 58,711
Claims priority, application Japan, Jun. 26, 1986, 61-96677[U]
Int. Cl.[4] B60C *9/18*
U.S. Cl. 152—535 **5 Claims**



1. A pneumatic radial tire for motocross comprising:

a toroidal carcass formed by at least one ply of textile cords arranged substantially in a tire radial direction;

a belt formed by at least two radially inner and outer layers of textile cords arranged at an inclination angle with respect to a tire circumferential direction so as to reinforce a crown portion of the carcass, cords of the outer layer being laid upon those of the inner layer in intersectional relationship to each other;

a first auxiliary layer arranged on one side of the belt outer layer in such a way that textile cords of said first auxiliary layer intersect the textile cords of the belt outer layer; and

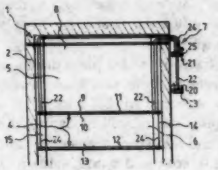
a second auxiliary layer arranged on the other side of the belt outer layer in such a way that textile cords of said second auxiliary layer are parallel to the textile cords of the belt outer layer.

4,799,524

PROTECTION AND/OR DECORATIVE DEVICE FOR APERTURES IN WALLS, WINDOWS AND THE LIKE

Claude Guermonprez, Saint Privaz 13790, Rousset, Bouches-du-Rhones, France

Filed Jul. 21, 1987, Ser. No. 75,962
Int. Cl.[4] E06B *3/94*
U.S. Cl. 160—84.1 **15 Claims**



1. A device for covering an aperture in a wall, said device comprising:

a screen that is adapted to be raised and lowered, which screen comprises a first retractable blind and a second retractable blind, said first and second blinds being disposed adjacent to each other;

means for raising and lowering said screen, said raising and lowering means comprising first means for raising and lowering said first blind and second means for raising and lowering said second blind;

each of said first and second blinds comprising foldable structures having first and second opposed ends, wherein the first end of said first blind is attachable to an upper portion of an aperture in a wall, the second end of said first blind is connected to said first means for raising and lowering said first blind and is also attached to said first end of said second blind, and the second end of said second blind is connected to said second means for raising and lowering said second blind;

a common control means comprising at least a first control system that controls said first means for raising and lowering said first blind and a second control system that controls said second means for raising and lowering said second blind, wherein said common control means is adapted to control said first and second control system so as to selectively operate either control system independently, wherein said first and second blinds can be raised or lowered independently, and to selectively control said first and second control systems simultaneously, wherein said first and second control systems cooperate together to raise and lower said first and second blinds simultaneously;

said first control system comprising first means for applying a force to said first means for raising and lowering said first blind,wherein said first means for applying a force is connected at one end to said first means for raising and lowering said first blind and is conneted at a second end to a first handle means;

said second control system comprising second means for applying a force to said second means for raising and lowering said second blind, wherein said second means for applying a force is connected at one end to said second means for raising and lowering said second blind and is connected at a second end to said second handle means; and

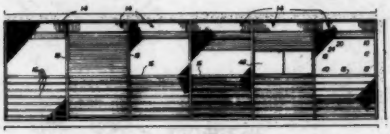
wherein said first means for applying a force extends through said second handle means is sliding relation thereto.

4,799,525

MULTI-OPTION SHUTTER AWNING ASSEMBLY

William D. Seymour, 20505 E. Country Club Dr., N. Miami Beach, Fla. 33180

Filed Dec. 23, 1986, Ser. No. 945,534
Int. Cl.[4] E06B 9/08
U.S. Cl. 160—133 21 Claims



1. A shutter assembly selectively positionable between a closed and an open position relative to an opening of a building or like structure, said assembly comprising:

(a) a barrier structure formed and constructed to be substantially rolled upon itself and extendable along its length in covering relation to at least a portion of a length of the building opening,

(b) storage means for at least partially supporting and retaining said barrier structure and comprising a support shaft rotatably mounted adjacent the building opening and secured to said barrier structure,

(c) a vertically oriented track assembly including two track elements disposed in spaced, parallel relation to one another and each disposed on an opposite side of the building opening and along the length thereof, each of said track elements disposed and configured to at least partially retain a correspondingly positioned edge of said barrier structure,

(d) said barrier structure comprising a primary portion having one end secured to said support shaft and an opposite free end disposable at various positions along the length of said track assembly and the building opening,

(e) said barrier structure further comprising at least one barrier segment detachably securable to said free end of said primary portion and selectively positionable along the length of said track assembly independently of said primary portion and in spaced relation to said free end of said primary portion and said support roller when not secured to said primary portion, and

(f) locking means disposed in interconnecting engagement between said track means and said one barrier segment for fixedly positioning said one barrier segment relative to said track assembly.

4,799,526

BLIND WITH LIGHT-TRANSMITTING SLATS

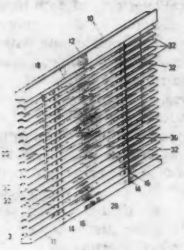
John R. Reeves, Brown Deer, Wis., assignor to Wausau Metals Corporation, Wausau, Wis.

Continuation-in-part of Ser. No. 879,270, Jun. 27, 1986, abandoned, which is a continuation of Ser. No. 494,427, May 13, 1983, abandoned. This application Apr. 9, 1987, Ser. No. 36,270
Int. Cl.[4] E06B 9/30
U.S. Cl. 160—168.1 22 Claims

1. A blind having an interior side and an exterior side and comprising:

(a) a plurality of elongated slats made of lightweight, flexible and generally resilient polycarbonate plastic material having a thickness not greater than 0.062 inches and selected light-transmitting qualities, each slat being bent by means of cold-forming without the application of heat to provide a transverse cross-sectional configuration in which a first longitudinally extending portion and a second longitudinally extending portion of the slat intersect to form a selected angle of not more than 170°, the angled slat structure imparting sufficient stiffness to the slat so that the slat will not substantially sag between and beyond widely spaced suspension points, and wherein at least one of the first and second portions is transparent, said transparent slat portion transmitting visible light with a minimum of distortion; and

(b) means for suspending the slats in parallel relation, the suspension means being adapted to rotate the slats about their longitudinal axes between an inwardly facing position, in which first surfaces of the slats are presented at the interior side of the blind with the first portions of the slats lying substantially within a single plane, and an outwardly facing position in which the first surfaces of the slats are



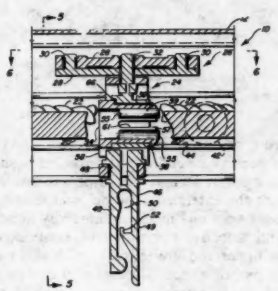
presented at the exterior side of the blind and the second portions of the slats lie generally within a single plane, the suspension means being further adapted to hold the slats at a distance from each other such that when the slats are in one of the inwardly facing and outwardly facing positions the portions of the slats not then co-planar extend sufficiently far toward the slat immediately adjacent thereto as to substantially prevent the passage of light in a direction generally normal to the co-planar portions of the slats without that light being interrupted by the slats.

4,799,527

VERTICAL BLIND ASSEMBLY

Joe D. Villoch, North Miami; Claudio U. Gatto, Miami, and Mike V. Oprisi, Miami Lakes, all of Fla., assignors to American Vertical Systems, Miami, Fla.

Filed Apr. 30, 1987, Ser. No. 49,653
Int. Cl.[4] E06B 9/30
U.S. Cl. 160—168.1 19 Claims



1. A vertical blind assembly comprising a plurality of vertically oriented slats disposed in spaced apart relation to one another and independently rotated about their own longitudinal aixs and collectively positionable between an extended and a closed orientation relative to and along the length of a supporting header structure, an improvement comprising:

a. a plurality of carrier assemblies equal in number to the number of slats depending from said header structure and

removably positionable along the length of said header structure,

b. connecting means for interconnecting said plurality of carrier assemblies to one another and for collective movement thereof along said header structure,

c. each carrier assembly comprising a base and a carrier element movably attached in depending relation to said base, said carrier element securable in supporting engagement with one of said slats,

d. an aperture means formed in said base and including a substantially central aperture; a drive rod having an elongated configuration and disposed to extend through each of said central apertures of each base,

e. each carrier assembly further comprising a drive element mounted on the respective base within said central aperture thereof and in surrounding, connected relation to said drive rod and rotatable therewith,

f. said drive element comprising an elongated annular configuration and a plurality of spaced apart body segments extending to one end thereof and formed of flexible material and having at least one longitudinally extending slot extending from our end of said drive element thereby allowing said one end to be forced into a constricted position of lesser diameter than said central aperture, whereby said drive element may be removably fitted within said central aperture,

g. a first gear structure fixedly mounted on said drive element and rotatable therewith, a second gear element fixedly mounted on said carrier element and rotatable therewith and connected in meshing engagement with said first gear structure, and

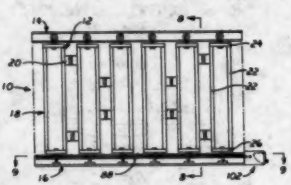
h. said drive rod and said, drive element, first and second gear structures and carrier element of each carrier assembly all cooperatively disposed and structured to concurrently rotate said slats upon rotation of said driving rod.

4,799,528

CLOSURE DEVICE

Richard Benitez, Apt. B, 9209 Connechusset Rd., Tampa, Fla. 33617

Filed Oct. 5, 1987, Ser. No. 104,429
Int. Cl.[4] E05D *15/26*
U.S. Cl. 160—199 **14 Claims**



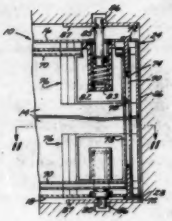
1. A closure device comprising at least one set of panels movable between an extended and retracted position to selectively secure a portal such as a door or window when said set of panels is in the extended position, said set of panels comprises at least two panel members hingedly attached to each other to permit selective extension and retraction of said set of panels on an upper and lower track, each said panel member comprising a pair of elongated panel elements held in substantially parallel spaced relation relative to each by an upper and lower plate coupled to opposite ends thereof, an upper and lower attachment device is coupled to said upper and lower plate respectively to operatively mount said set of panels between said upper and lower track and a lock means including a lock plate movable between a first and second position pivotally coupled to said lower track having a plurality of lock slots formed therein corresponding to each said lower attachment device disposed to engage each said lower attachment device when in said first position to secure said set of panels in the extended position to prevent entry through the portal and to disengage said lower attachment device when in said second position to permit movement of said set of panels to the retracted position to permit entry through the portal and a retainer member disposed to selectively engage said lock plate to maintain said lock plate in said first position.

4,799,529

WARDROBE DOOR

Thomas H. McAfee, Seal Beach, Calif., assignor to Charmac, Inc., Compton, Calif.

Filed Nov. 6, 1986, Ser. No. 927,544
Int. Cl.[4] E05D *7/08, 15/06;* E04C *2/38*
U.S. Cl. 160—206 **13 Claims**



1. A door structure comprising:

a panel having a central region and a parameter region, a plurality of frame members formed of channel stock having an internal longitudinal spline having a screw race and being substantially identical in cross-section disposed about said perimeter region of the panel and being connected together to form mitered corners, a solid block disposed within said frame members at one or more of said corners, and a door hinge connected to said solid block, said solid block being provided with grooves which receive said spline to hold said solid block within said frame member.

4,799,530

METHOD FOR RECOVERING CASTING REFRACTORY COMPOSITIONS FROM INVESTMENT CASTING SLURRIES

David H. Sturgis, Gladstone, and William W. Kemp, Milwaukie, both of Oreg., assignors to Precision Castparts Corp., Portland, Oreg.

Filed Feb. 8, 1988, Ser. No. 153,063
Int. Cl.[4] B02C *23/20;* C01F *17/00*
U.S. Cl. 164—5 **30 Claims**

1. A process for the recovery of Y_2O_3 from a used investment casting slurry having Y_2O_3 in combination with a binder, said process comprising:

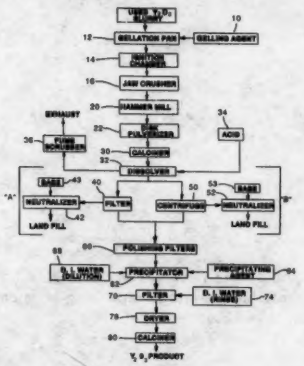
forming a solid mass from said slurry;

pulverizing said mass to form a powder;

forming a solution from said powder, said solution having

yttrium dissolved therein, with said binder remaining undissolved,

separating said binder from said solution; and



removing yttrium from said solution after said separating of said binder.

4,799,531

CASTING METHOD IN HIGH-PRESSURE CASTING

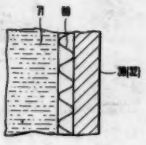
Tadashi Yamamoto, and Michiyuki Suzuki, both of Yamaguchi, Japan, assignors to UBE Industries, Inc., Ube, Japan

Filed Jul. 23, 1987, Ser. No. 77,122

Claims priority, application Japan, Jul. 31, 1986, 61-178747

Int. Cl.[4] B22D *17/00, 17/20*

U.S. Cl. 164—120 **20 Claims**



1. A method of pressure die casting molten metal including a casting sleeve and metal molds comprising the steps of:

disposing a thin-plate body having hollows adjacent to at least one inner wall surface of said casting sleeve;

pouring said molten metal into said casting sleeve;

injecting said molten metal from said casting sleeve into said metal molds; and

applying pressure to said molten metal in said casting sleeve and said metal molds, wherein said pressure is sufficient to exceed the permeation pressure of said thin-plate body having hollows;

whereby said molten metal infiltrates into said hollows and is substantially solidified upon contact with said inner wall surface of said casting sleeve.

4,799,532

METHOD OF MAKING A CRUCIBLE AND MELTING REACTIVE METAL ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 834,727, Feb. 28, 1986, Pat. No. 4,723,764.

This application Nov. 19, 1987, Ser. No. 122,968

Int. Cl.[4] B22D *7/06*

U.S. Cl. 164—47 **4 Claims**

1. The method of making an active brazing alloy comprising the steps of forming a crucible of slip cast fused silica, coating the interior of the crucible with an yttria lining, firing ,the yttria-lined crucible, entering metals into the crucible, and heating the metals to cause them to melt and form the alloy.

4,799,533

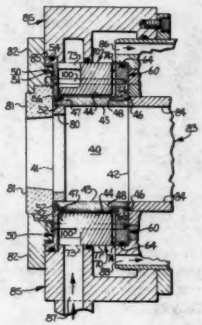
HORIZONTAL CONTINUOUS CASTING MOLD

Max Ahrens, and Manfred Haissig, both of Irvine, Calif., assignors to Steel Casting Engineering, Ltd., Orange, Calif.

Filed Jun. 20, 1986, Ser. No. 876,845

Int. Cl.[4] B22D *11/00*

U.S. Cl. 164—137 **10 Claims**



10. A method for replacing in a horizontal continuous metal casting mold a mold tube having a damaged casting surface;

said mold including a mold tube having an inner casting surface, an outer casting surface, and input and output ends each providing a peripherally disposed surface perpendicular to the mold tube axis with a shallow peripheral groove formed therein, and first and second flanges respectively disposed peripherally about said input and output ends and in abutting, liquid-sealing relation therewith, said flanges each including a peripheral rim surface perpendicular to the flange axis with a knife-edged peripherally disposed protrusion formed therein and adapted to sealingly engage said groove, and tightenable removable securing means disposed axially of said mold at selected peripheral intervals for drawing together toward one another and first and second flanges and compressively captivating said tube therebetween to form a unitary assembly,

said method comprising the steps of:

disassembling said mold by removing said securing means and respectively parting said abutments between said mold tube and said first and second flanges;

replacing said mold tube with another mold tube having the same configuration and an undamaged casting surface;

positioning said first and second flanges respectively adjacent the input and output ends of the replacement mold tube such that the protrusions formed on said flanges respectively adjoin the grooves formed in the ends of said tube;

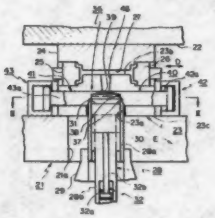
installing said removable securing means and drawing said first and second flanges toward one another so that they respectively abut said input and output ends of said replacement mold tube; and

tightening said securing means, thereby compressing said tube between said first and second flanges forcing said protrusions swageably into said grooves, respectively, and thus reestablishing said liquid-tight seals at the abutments at both ends of said replacement mold tube while at the same time interconnecting said first and second flanges and said replacement mold tube into a unitary assembly.

4,799,534
VERTICAL DIE CASTING MACHINE

Toyoaki Ueno; Sadayuki Dannoura, and Masashi Uchida, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Mar. 2, 1987, Ser. No. 20,390
Claims priority, application Japan, Mar. 3, 1986, 61-44185; Mar. 3, 1986, 61-44186
Int. Cl.[4] B22D *17/12*
U.S. Cl. 164—314 29 Claims



1. A vertical die casting machine of a vertically clamping type, comprising:

stationary and movable platens;

a mold arrangement including lower stationary and upper movable molds which are clamped between said platens to define a die cavity;

a casting sleeve;

a plunger slidably disposed in said casting sleeve, said plunger having a plunger tip at the upper end thereof, which tip together with said sleeve defines a melt space wherein a melt is received for an upward injection of the melt by said plunger into said cavity through a melt passage, said melt passage being freely defined between said cavity and the surface of the melt received in said melt space;

an injection hydraulic piston-cylindrical for actuating said plunger therein to selectively inject melt into said die cavity during an injection operation; and

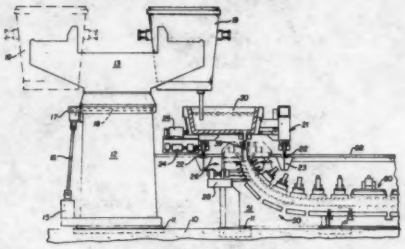
means for constricting said melt passage, said constricting means including at least two movable flat parting plates disposed between said sleeve and said stationary mold or in said stationary mold, each of said parting plates having a groove forming a semi-circle at the parting face thereof, said parting plate being clamped when the melt is injected to define a vertically extending through-hole formed by said semi-circular grooves, said through-hole having a cross sectional area at the upper end thereof smaller than that at the upper end of said sleeve, the upper end of said sleeve being in contact with said parting plates from below during the injection operation.

4,799,535
MODULAR CONTINUOUS SLAB CASTERS AND THE LIKE

Herbert Lemper, 130 Canterbury Rd., McMurray, Pa. 15317

Continuation of Ser. No. 36,407, Apr. 9, 1987, abandoned. This application Jan. 22, 1988, Ser. No. 147,222
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—416 20 Claims

1. A modular caster assembly for continuously casting molten steel comprising a foundation for supporting said assembly, a ladle turret module including a ladle supported by a ladle turret base having a rotatable ladle turret frame on the top of said base, a tundish module including tundish means movable into position beneath said ladle, a mold oscillator module including an oscillator base frame and a mold oscillator on said frame, an adjustable mold for molten steel removably fastened to said mold oscillator module, at least one segment module removably disposed beneath said mold for initially receiving steel from said mold, a straightening module for receiving steel from said segment module, a starting bar handling and charging module, and interconnecting module means carrying pre-

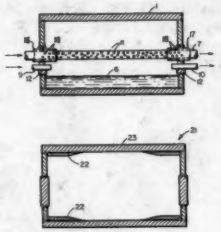


wired and preplumbed electrical and fluid lines with plug-in connectors matching corresponding plug-in connectors in each module of said assembly.

4,799,536
SHEET CASTER COOLING

John P. Ingalls, Centerburg; Robert E. Maringer, Worthington, and Ray D. Wood, Grove City, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 16, 1987, Ser. No. 97,488
Int. Cl.[4] B22D *11/06, 11/124*
U.S. Cl. 164—479 8 Claims



1. Apparatus for casting metal sheet from the melt comprising

a hollow, cylindrical casting drum having a casting surface on its exterior,

means for rotating the casting drum, about a substantially horizontal cylinder axis,

tundish means adjacent the casting surface for delivering a layer of molten metal to the casting surface,

a liquid coolant pool in the lower portion of the interior of the casting drum,

means for maintaining the coolant pool level below about the cylinder axis,

means for spraying a coolant liquid inside the casting drum against substantially the entire inside surface of the casting drum above the liquid level, and

shaped inserts attached to the inside surface of the casting drum at selected locations for selectively controlling the heat transfer from the casting drum to the coolant at the selected locations along the inside surface of the casting drum to create a selected thickness profile in the cast sheet.

6. The method for sheet casting comprising rotating a hollow, cylindrical casting drum having an outer casting surface about a generally horizontal cylinder axis, delivering a molten metal layer to the outer casting surface, cooling the interior of the casting drum by admitting a liquid coolant therein, main-

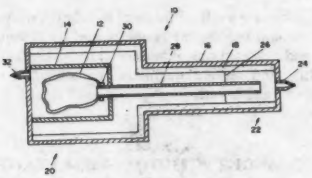
taining a coolant liquid level below about the cylinder axis and spraying a liquid coolant inside the casting drum onto substantially the entire surface of the drum above the coolant liquid level wherein the improvement comprises selectively controlling the heat transfer from the casting drum to the coolant at selected locations along the inside surface of the casting drum by spraying a first coolant liquid against preselected portions of the inside surface of the casting drum and a second coolant over preselected second portions of the inside surface to create a selected thickness profile in the cast sheet.

4,799,537

SELF REGULATING HEAT PIPE

Bryan C. Hoke, Jr., Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

Filed Oct. 13, 1987, Ser. No. 108,279
Int. Cl.[4] F28D *15/02*
U.S. Cl. 165—32 **4 Claims**



1. A heat pipe comprising:
a sealed hollow casing;
a quantity of vaporizable heat transfer fluid within the casing;
a quantity of non-condensible gas within the casing;
an expandable primary reservoir volume with an opening, the primary reservoir being located within the casing in a evaporator region of the casing to which heat is applied and acted upon by a force means which resists the expansion of the primary reservoir volume, wherein the force means is a secondary reservoir filled with a non-condensible gas, with the primary reservoir volume enclosed within the secondary reservoir; and
conduit means with one end attached to the opening of the primary reservoir, and the other end opening into a condenser region of the heat pipe from which heat is removed.

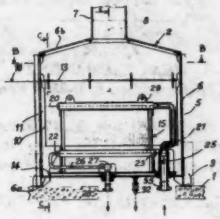
4,799,538

DEVICE FOR CONDENSING STEAM UNDER PRESSURE AND ITS APPLICATION TO THE COOLING OF A NUCLEAR REACTOR AFTER AN INCIDENT

Philippe Dagard, Marly le Roi, and Michel Couturier, Le Vesinet, both of France, assignors to Framatome, Courbevoie, France

Filed Jul. 1, 1986, Ser. No. 880,975
Claims priority, application France, Jul. 1, 1985, 85 10022
Int. Cl.[4] F22B *1/02*; F28B *1/02*; G21C *9/00*
U.S. Cl. 165—47 **3 Claims**

1. Device for condensing steam at a pressure significantly above atmospheric pressure, comprising a storage vessel (6) containing water, a distribution and exchange unit (15) fixed inside the storage vessel (6) and incorporating a set of substantially vertical exchange tubes (24) each connected at its upper end to a steam inlet manifold (20) and at its lower end to a condensate discharge manifold (29), and a means (30, 31) for supplying water to the storage vessel (6), and for holding the water in the vessel (6) at a substantially fixed level (16) wherein
(a) the upper part of the storage vessel (6) is connected to a steam discharge stack (7) operating by natural draught;
(b) a substantially horizontal tranquilizer grid (13) is arranged in the storage vessel (6), substantially at said fixed level, above the exchange unit (15) and under the discharge stack to prevent the entrainment of water by the steam to the stack (7);
(c) the device constituting a boiler-condenser operating in such a way that the fluid in contact with the outer surface of the tubes (24) consists of a two-phase mixture of water



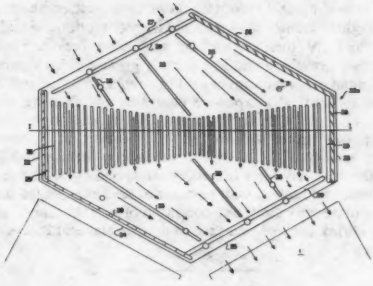
and of the steam produced by the heat of condensation of the pressurized steam and, by the heat of the condensate, from the water of the storage vessel (6), the circulation of the two-phase mixture being accelerated by density effect and by the draught of the stack (7).

4,799,539

THERMALLY EFFICIENT ROOM VENTILATOR

Howard S. Atkin, Harrogate, and Christopher J. Palmer, Leeds, both of United Kingdom, assignors to Advanced Design & Manufacture Limited, Bradford, England

Continuation-in-part of Ser. No. 836,341, Mar. 5, 1986, abandoned. This application Jun. 1, 1987, Ser. No. 56,607
Claims priority, application United Kingdom, May 12, 1985, 8506415
Int. Cl.[4] F28F *3/00*
U.S. Cl. 165—54 **11 Claims**



1. Apparatus for extracting stale air from inside a room and introducing fresh air into the room, the apparatus comprising:
an enclosure adapted to be mounted within a wall or window of the room with a first end open to the exterior of the room and a second end open to the interior of the room;
a fresh air inlet and a stale air outlet located at said first end;
a stale air inlet and a fresh air outlet located at said second end;
a first fan located adjacent said fresh air inlet and operable to introduce fresh air into the room.;
a second fan located adjacent said stale air outlet and operable to extract stale air from inside the room; and
a counter flow heat exchanger located between said first and second ends, the heat exchanger including two separate flow paths therethrough, one connecting the fresh air inlet

with the fresh air outlet and the other connecting the stale air inlet with the stale air outlet, the two flow paths being substantially parallel to each other and extending perpendicularly to the wall in which it is adapted to be installed, and being separated from each other by a thermally conducting material across which, in use, counter flow heat exchange occurs between the fresh air and the stale air flowing in parallel but opposite directions.

4,799,540

HEAT EXCHANGER

Dirk Pietzcker, Niederwaldstr. 5, D-3500 Kassel, Fed. Rep. of Germany

Division of Ser. No. 771,630, Aug. 30, 1985, Pat. No. 4,692,979. This application Jul. 1, 1987, Ser. No. 68,941

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432073

Int. Cl.[4] F28D 1/04; F28F 7/00

U.S. Cl. 165—76 9 Claims

1. A heat exchanger comprising: a plurality of heat dissipating metal fins, said fins each having at least one oval or oblong shaped collar, said collars providing openings through said fins and having initial oval or oblong cross sections; at least one fluid conducting metal tube, said tube extending through the openings of said fins and having first similarly shaped wall portions at opposite ends of a major axis thereof and second similarly shaped wall portions at opposite ends of a minor axis thereof, and said tube being attached to said fins by merely at first providing said tube with outer cross section being similar but slightly smaller than said initial cross sections of said openings and by then expanding said tube into a plastically stretched condition and to a slightly greater cross section than said initial cross sections of said openings such that said collars are in an elastically expanded condition and thus pressed with elastical force against said tube; and at least one elongated spacer supporting said second wall portions at a preselected location thereof, said spacer extending through said tube, substantially having a breadth corresponding to the distance between said second wall portions at said preselected location in the plastically stretched condition of said tube, and preventing a shrink-back of said tube under the elastical forces of said collars.

4,799,541

CONICAL CONTACT HEAT EXCHANGER

Tibor Buna, Evergreen, and William H. Miller, Littleton, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 10, 1987, Ser. No. 83,364

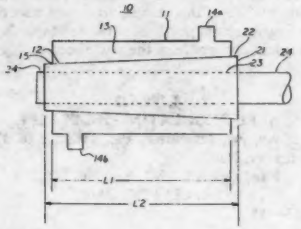
Int. Cl.[4] F28D 15/02; F28F 5/00

U.S. Cl. 165—78 11 Claims

1. A heat exchanger comprising:

a first member of predetermined length having an outer surface and a conical inner surface, with a predetermined cone angle, surrounding a hollow region extending for said predetermined length to provide first and second open ends; and

a second member of preselected length greater than said predetermined length having an outer conical surface with a cone angle equal to said predetermined cone angle, removably inserted in said hollow region such that said outer surface of said second member is in thermal contact with said inner surface of said first member and extends beyond said first and second ends, said preselected length and said predetermined length providing a length differential which, in cooperation with said predetermined cone



angle, provides a self adjustment to relative movements of said first and second members caused by thermal expansions and contractions, whereby thermal contact between said first and second members is maintained over said predetermined length.

4,799,542

HEAT EXCHANGER WITH THIN-FILM EVAPORATOR

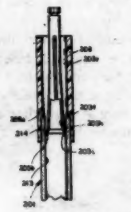
Hans Sladky, Wischhofstrasse 7, D-2000 Hamburg 65, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 628,017, Jul. 5, 1984, abandoned. This application Aug. 4, 1986, Ser. No. 892,947

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324330

Int. Cl.[4] F28D 3/02

U.S. Cl. 165—118 11 Claims



1. A tube assembly for a falling film heat exchanger comprising:

a metal tube;

a synthetic resin sleeve fitted snugly over said tube and formed with an inwardly extending shoulder abutting an upper end of said tube, said sleeve being open upwardly over its entire cross section;

an insert received in said sleeve and said tube and having:

a frustoconical lower portion diverging outwardly toward and within an inner wall of said tube and defining therewith a narrow annular gap from which a liquid film can pass downwardly along said inner wall of said tube,

a solid cylindrical stem extending upwardly from said frustoconical lower portion, and

a plurality of angularly equispaced guide webs extending radially outwardly from said stem lying in respective axial planes, said stem having a free end extending above said webs and said sleeve, said guide webs having upper portions slidably engaging an inner wall of said sleeve for accurately positioning said edge relative to said inner wall of said tube, lower portions extending into said tube, and steps respectively between each upper portion and lower

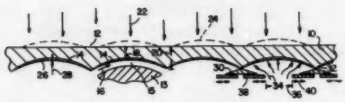
portion of each guide web engaging said shoulder for limiting the penetration of the insert into said tube, said insert being integrally molded from a synthetic resin and is separate from said sleeve, said frustoconical lower portion being formed with a downwardly widening conical cavity terminating in an outwardly extending bevel defining said edge.

4,799,543

MEANS FOR TEMPERATURE CONTROL OF HEATED SURFACES

Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070, and Stephen Whitaker, Davis, Calif., assignors to Arthur H. Iversen, Saratoga, Calif.

Filed Nov. 12, 1987, Ser. No. 119,698
Int. Cl.[4] F28F *13/00*
U.S. Cl. 165—135 **13 Claims**



1. A heat sink structure including a heated surface and further including a heat exchange surface on the interior surface thereof, said structure providing means for enclosing said heat exchange surface in a fluid tight manner and including means for providing a flow of fluid to remove heat from said heat exchange surface, said heat sink structure having at least one of a variable wall thickness separating said heated surface from said fluid cooled surface and a variable distribution of heat flux on said heated surface, the improvement wherein said fluid cooled heat exchange surface includes:

means, disposed on said fluid cooled heat exchange surface in a variable manner commensurate with said variable wall thickness and said variable distribution of heat flux such that an approximately uniform temperature is achieved over said heated surface

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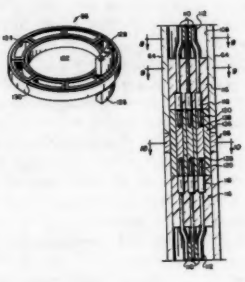
4,799,544

DRILL PIPES AND CASINGS UTILIZING MULTI-CONDUIT TUBULARS

Harry B. Curlett, Dallas, Tex., assignor to Pangaea Enterprises, Inc., Fort Worth, Tex.

Division of Ser. No. 730,831, May 6, 1985, Pat. No. 4,683,944. This application Jul. 10, 1987, Ser. No. 72,053
Int. Cl.[4] E21B *33/10*
U.S. Cl. 166—65.1 **7 Claims**



1. A seal adapted for use with a multi-conduit well tubular, or the like, comprising:

a plate with a plurality of fluid passages, each said passage corresponding to an opening of a conduit of said multi-conduit tubular, and a groove on said plate around each said passage; and

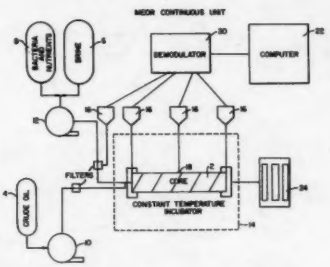
elastomer means partially embeddable into each said groove for sealing each said conduit of a tubular to a corresponding conduit of another similar tubular.

4,799,545

BACTERIA AND ITS USE IN A MICROBIAL PROFILE MODIFICATION PROCESS

Richard S. Silver, Allentown; Pamela M. Bunting, Cheswick, both of Pa.; William G. Moon, Newton, N.J., and Willard P. Acheson, Pittsburgh, Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 22,857, Mar. 6, 1987, abandoned. This application Dec. 29, 1987, Ser. No. 140,892
Int. Cl.[4] E21B *33/138, 43/22*
U.S. Cl. 166—246 **28 Claims**



1. A process for enhancing oil recovery by improving the sweep efficiency of a water flood through an oil producing reservoir which has zones of relatively high permeability and saline connate water, comprising the steps of:

isolating a bacterium that has the following characteristics:
it is motile;
it is a facultative anaerobe;
it is at least halotolerant;
it is at least thermotolerant;
it produces an exopolymer; and
it sporulates;

preparing a suspension of said bacterial spores or cells or mixtures thereof;

injecting said suspension into an oil producing reservoir where said spores or cells may become lodged in zones of relatively high permeability; and

contacting said spores or cells with a nutrient solution to induce them to plug said zones of relatively high permeability, said nutrient solution comprises a source of phosphate nutrient as polyphosphate.

10. An enhanced oil recovery process comprising selectively plugging relatively high permeable zones within a petroleum reservoir using a biologically pure strain of *Bacillus licheniformis*, NRRL No. B-18179 or its spores or mixtures thereof.

4,799,546

DRILL PIPE CONVEYED LOGGING SYSTEM

Donald E. Hensley; E. Edward Rankin; Martin L. Tomek, all of Houston, and David M. Moody, Spring, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 23, 1987, Ser. No. 111,758
Int. Cl.[4] E21B *23/08, 47/00*
U.S. Cl. 166—250 **34 Claims**

1. A method of logging highly deviated well boreholes comprising the steps of:

(a) rotatively attaching a logging tool on the end of a string of drill pipe;

(b) pushing the logging tool along the borehole past a zone

of interest in a deviated region wherein the logging tool is permitted to move against the low side of the well borehole;

(c) placing a weight along one side of the logging tool to enable the logging tool to be rotated by gravity relative to the low side of the deviated well borehole;

(d) pulling the logging tool past the zone of interest without rotating the logging tool during pulling relative to the low side of the borehole; and

(e) performing logging operations in the zone of interest by the logging tool with a fixed rotational position relative to the zone of interest.

28. An apparatus for logging a zone of interest beyond a deviated potion of a deviated well borehole, the apparatus comprising:

(a) means for rotatively mounting a logging tool on the end of a string of drill pipe;

(b) weight means along one side of the logging tool to enable the logging tool to be rotated by gravity relative to the low side of the deviated well borehole;

(c) standoff means adjacent to said logging tool to support said logging tool wherein the standoff means controllably permits rotation and wherein said standoff means includes a locked position and a freely rotating position for enabling said logging tool to be rotated by said weight means for alignment relative to the low side of the deviated well borehole;

(d) separate male and female connectors deployed on a logging cable and on said logging tool for controllable connection and disconnection to permit logging of the zone of interest by said logging tool wherein data from the logging tool is provided on the logging cable through said mated connectors during retrieval of said logging tool past the zone of interest.

4,799,547

A CO_2 DRIVE PROCESS FOR OIL RECOVERY EMPLOYING AN ALCOHOL ETHOXYCARBOXYLATE SURFACTANT

John K. Borchardt, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 909,754, Sep. 19, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 150,471

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—275 **19 Claims**

1. A process for enhancing the recovery of oil from a subterranean oil-containing reservoir having a temperature of at least about 40° C., which comprises steps for

(a) injecting into an injection well in the reservoir substantially liquid CO_2 and an aqueous mixture containing between about 50 and 10,000 parts per million by weight, calculated on the weight of the water, of one or more surfactants of the formula

$$R—(OCH_2CH_2)_x—Z$$

wherein R represents an alkyl group of about 8 to 16 carbon atoms, x is an integer having an average value of about 5 to 20, and Z represents either a —OCOOM formate group or a —OCH_2COOM acetate group, with M representing a mono-valent inorganic cation, to displace oil from the reservoir, and

(b) recovering the displaced oil from one or more recovery wells in the reservoir.

4,799,548

GELABLE COMPOSITIONS AND USE THEREOF IN STEAM TREATMENT OF WELLS

Naim A. Mumallah, and Peter H. Doe, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 6,821, Jan. 23, 1987. This application Apr. 22, 1988, Ser. No. 185,009

Int. Cl.[4] E21B *33/138, 43/24*

U.S. Cl. 166—288 **13 Claims**

1. A method of treating a subterranean formation penetrated by a well comprising:

(a) injecting a gelable composition into the well wherein the composition consists essentially of water, a water-dispersible polymer, a first water-dispersible crosslinker, and a second water-dispersible crosslinker wherein said first and second crosslinkers have differing temperature responsive crosslinking characteristics over the temperature range of about 70° F. to about 400° F. which enables crosslinking of said polymer and gelation of said composition over substantially the entire temperature range of about 70° F. to about 400° F.; and

(b) injecting steam into the well after step (a).

4,799,549

GEL-FORMING AQUEOUS MICROEMULSIONS FOR SOIL STABILIZATION

Bernard Vinot, Nice; Gerard Berrod, Villeurbanne, and Jean-Louis Brun, Lyons, all of France, assignors to Rhone-Poulenc Specialites Chimique, Courbevole, France

Filed Feb. 13, 1986, Ser. No. 828,877

Claims priority, application France, Feb. 13, 1985, 85 02034

Int. Cl.[4] B01J *13/00;* **C09K** *17/00;* **F02D** *3/12*

U.S. Cl. 166—293 **8 Claims**

1. A stable, gel-forming composition of matter adopted for reversible soil stabilization, comprising an aqueous microemulsions of (i) an aqueous phase comprising an aqueous solution of a water-soluble alkali metal silicate, (ii) an organic phase comprising a gelling reagent therefor, said gelling reagent comprising an alkyl ester of a saturated or unsaturated aliphatic mono-, di- or polycarboxylic acid, an alkyl ester of a carbocyclic carboxylic acid, a dialkyl and/or trialkyl phosphate, a lactone, a lower alkylamide, or a ketoester, and (iii) at least one surface active agent for preparing the microemulsion of the organic phase and the aqueous phase.

6. A method for the sealing/consolidation of a soil formation, comprising injecting therein the composition of matter as defined by claim 1 and permitting same to harden/hardening same.

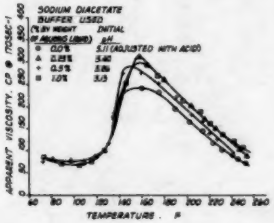
7. The method as defined by claim 6, said soil formation comprising an oil well.

4,799,550

SUBTERRANEAN FORMATION TREATING WITH DELAYED CROSSLINKING GEL FLUIDS

Phillip C. Harris, and Joe M. Sandy, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 18, 1988, Ser. No. 182,625
Int. Cl.[4] E21B *33/138, 43/26*
U.S. Cl. 166—300 **20 Claims**



1. A method of treating a subterranean formation comprising:

(a) preparing an aqueous gel by admixing an organic carboxylated gelling agent with an aqueous liquid;

(b) combining a buffer with said aqueous gel in an amount sufficient to result in and maintain the pH thereof at a level of about 5 or above at ambient temperature;

(c) combining a zirconium IV-containing crosslinking compound with said aqueous gel in an amount sufficient to result in the delayed crosslinking of said gel; and

(d) introducing the aqueous gel mixture formed in step (c) into said subterranean formation whereby said mixture is heated by said formation and thereby caused to crosslink therein.

9. A method of fracturing a subterranean formation comprising:

(a) preparing an aqueous gel by admixing an organic carboxylated gelling agent with an aqueous liquid;

(b) combining a buffer with said aqueous gel in an amount sufficient to result in and maintain the pH thereof at a level of about 5 or above at ambient temperature;

(c) combining a zirconium IV-containing crosslinking compound with said aqueous gel in an amount sufficient to result in the delayed crosslinking of said gel;

(d) combining carbon dioxide with the aqueous gel mixture formed in step (c) in an amount in the range of from about 5% to about 96% by volume of the aqueous gel mixture and carbon dioxide; and

(e) introducing the resulting aqueous gel mixture and carbon dioxide into said subterranean formation whereby said aqueous gel mixture is heated by said formation and thereby caused to crosslink in said formation and said formation is fractured therewith.

4,799,551

ENHANCED OIL RECOVERY

Sándorné Bauer, Nagykanizsa; Zoltán Biró , Zalaegerszeg; Sándor Doleschall; Éva Farkas, both of Budapest; Gyula Milley, Nagykanizsa; Tibor Pási, Nagykanizsa; Antal Szittár, Zalaegerszeg; György Tiszai; Géza Udvardi, both of Nagykanizsa, and József Pány, Budapest, all of Hungary, assignors to Magyar Szenhidrogenipari Kutato-Fejleszto Intezet, Szazhalombatta, Hungary

Continuation of Ser. No. 899,657, Aug. 25, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 94,014
Claims priority, application Hungary, Aug. 29, 1985, 3260/85
Int. Cl.[4] E21B *43/22, 43/24*
U.S. Cl. 166—303 **5 Claims**

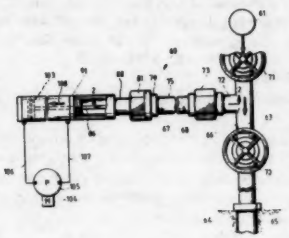
1. A process for the enhanced recovery of oil from oil bearing strata with gaseous or liquid form of carbon dioxide, the improvement which comprises prior to or simultaneously with the injection of carbon dioxide, injecting into the strata in a single slug or in a plurality of slugs a material consisting essentially of at least one compound which has a clay-effect inhibiting cation with a hydrated ion diameter of from about 0.136 to about 0.15 nm and a coordination number of 12, in a concentration of from about 0.001 mol to about 50 mol.

4,799,552

METHOD AND APPARATUS FOR INJECTING RADIOACTIVE TAGGED SAND INTO OIL AND GAS WELLS

Elick H. Acree, Webster, Tex., assignor to Gulf Nuclear, Inc., Webster, Tex.

Filed Jul. 9, 1987, Ser. No. 71,402
Int. Cl.[4] E21B *43/00*; G01V *5/00*
U.S. Cl. 166—305.1 **5 Claims**



1. An injection system for injecting radioactive tagged sand into fluids used in hydrualic well fracturing, or acidizing, operations of an earthen formation penetrated by a well bore, the fluid being pumped under pressure through piping into the well bore and earthen formation by a high pressure pump located on the surface of the earth, comprising:

means for forcing the radioactive tagged sand into the piping, the forcing means being disposed between the well bore and the high pressure pump, the forcing means including means for containing the radioactive tagged sand, wherein the forcing means includes a piston having a force transmitting surface in contact with the radioactive tagged sand, and the container means includes a mating cylinder having open ends, with a first end in communication with the piping and a second end receiving the force transmitting surface of the piston of the forcing means;

the forcing means and container means are disposed within a housing;

means for equalizing the pressure between the piping, the forcing means, and the container means, wherein the pressure equalizing means includes at least one flow path in communication between the piping and surface of the piston which is not in contact with the radioactive tagged sand, and the at least one flow path is disposed between the housing and the cylinder of the container means, whereby the radioactive tagged sand may be readily injected into the fluids in the piping without the necessity of overcoming the high pressure present in the piping, and the radioactive tagged sand will not contaminate the high pressure pump.

3. A method for injecting radioactive tagged sand into fluids used in hydraulic well fracturing, or acidizing, operations of an earthen formation penetrated by a well bore, the fluid being pumped under pressure through piping into the well bore and earthen formation by a high pressure pump located on the surface of the earth, comprising the steps of:

forcing the radioactive tagged sand from a means for containing the radioactive tagged sand, which is disposed between the well bore and the high pressure pump, into the piping;

suspending the radioactive tagged sand in a gel, whereby the sand may be easily forced from the container means into the piping; and

equalizing the pressure between the piping and the container means, whereby the radioactive sand may be readily injected into the fluids in the piping without the necessity of overcoming the pressure present in the piping, and the radioactive tagged sand will not contaminate the high pressure pump.

4,799,553

PETROLEUM SULFONATE ADJUVANTS IN EPOXY RESIN CORROSION-INHIBITING COMPOSITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 917,750, Oct. 10, 1986, Pat. No. 4,749,042, which is a division of Ser. No. 749,366, Jun. 27, 1985, abandoned, which is a division of Ser. No. 298,444, Sep. 1, 1981, abandoned. This application Apr. 14, 1988, Ser. No. 181,475

Int. Cl.[4] F21B *41/02*

U.S. Cl. 166—310 **15 Claims**

1. A method for treating the downwell metal surfaces comprising:

injecting a composition comprising an epoxy resin, a polyamine, a petroleum sulfonate and a hydrocarbon diluent into the downwell environment of a gas or oil well wherein said downwell environment is characterized by the presence of at least one of the following:

(a) hydrogen sulfide

(b) carbon dioxide

(c) organic acids

(d) water having a high electrolyte concentration

(e) high temperature and high pressure and allowing the composition to contact the downwell metal surfaces for a time sufficient to form a corrosion-inhibiting film thereon.

4,799,554

PRESSURE ACTUATED CLEANING TOOL

Timothy D. Clapp, Kenai, Ak., and William H. McCormick, Plano, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 37,176, Apr. 10, 1987, abandoned. This application Dec. 11, 1987, Ser. No. 131,847

Int. Cl.[4] E21B *37/00*

U.S. Cl. 166—312 **14 Claims**

1. Apparatus for cleaning flow conductors comprising:

a. first mandrel means and second mandrel means with a longitudinal flow passageway extending through each;

b. means for connecting one end of the first mandrel means to a source of cleaning fluid;

c. the second mandrel means slidably disposed within the first mandrel means and a portion of the second mandrel means extending from the other end of the first mandrel means;

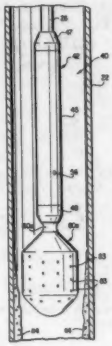
d. means for rotating the second mandrel means relative to the first mandrel means in response to fluid pressure changes within the longitudinal flow passageway;

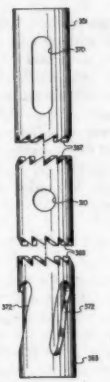
e. means for attaching a cleaning tool to the portion of the second mandrel means extending from the first mandrel means;

f. piston means attached to the second mandrel means;

g. one side of the piston means exposed to fluid pressure within the longitudinal flow passageway and the other side of the piston means exposed to fluid pressure exterior to the first mandrel means whereby fluid pressure on the one side of the piston means will move the second mandrel means longitudinally to a further extended position relative to first mandrel means;

h. means for biasing the second mandrel means to retract from its further extended position; and





i. means for translating longitudinal movement of the second mandrel means into rotational movement.

4,799,555

CHISEL PLOW MOUNTING ASSEMBLY

Carl L. Badger, 8548 N. Elyria Rd., West Salem, Ohio 44287

Filed Jan. 28, 1987, Ser. No. 7,711

Int. Cl.[4] A01B *23/02*

U.S. Cl. 172—751 **6 Claims**

1. A mounting assembly for attaching a chisel plow share or the like to a plow standard, comprising:

(a) a first bracket releasably mounted over the projecting end of the standard with a portion of said bracket surrounding the standard and a portion thereof engaging a forward surface thereof;

(b) a second bracket movably and releasably mounted on the standard and engaging the rear surface thereof;

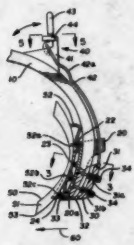
(b') a mounting support member secured to the share;

(c) first attachment means carried by said first bracket for releasable engagement with the mounting support member,

(d) second attachment means carried by said second bracket for releasable engagement with the mounting support member;

(e) first locking means for rigidly interconnecting said first bracket and the standard; and

(f) second locking means carried by the second bracket and being movable between locking and unlocking positions



by drawing said second bracket upwardly along the standard for locking said share to the standard.

4,799,556

DRILLING BOOM

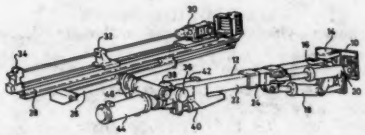
Bruce A. Foster, Retford, and Raymond Hedges, Worksop, both of United Kingdom, assignors to The Steel Engineering Co., Ltd., Roodepoort, South Africa

Filed Apr. 1, 1987, Ser. No. 32,636

Claims priority, application United Kingdom, Apr. 2, 1986, 8607997

Int. Cl.[4] E21C *5/00, 9/00*

U.S. Cl. 173—43 **7 Claims**



1. A drilling boom, comprising:

an arm articulated at one end on a carrier which stands on a floor;

a mounting for a drill feed beam articulated at the opposite end of said arm and offset to one side of said arm, said arm and said mounting being arranged so that a drill on a mounted drill feed beam can drill sufficient holes in a rock face, including holes at floor level; and

a roll-over unit between said mounting and said opposite end of said arm which allows said mounting to roll about a first axis which, in face drilling, will be parallel to the length of a drill on the mounted drill feed beam, said mounting including a rotation unit for rotating said drill feed beam through substantially 180° about a second axis offset from said first axis and perpendicular to the length of a drill on the mounted drill feed beam so that a drill on the mounted drill feed beam can operate in two mutually opposite directions.

4,799,557

ELECTROMAGNETIC PILE DRIVER

Georges Jacquemet, Caluire, France, assignor to Martelec - Societe Civile Particuliere, Caluire, France

Filed Apr. 17, 1986, Ser. No. 853,357

Claims priority, application France, Apr. 29, 1985, 85 06871

Int. Cl.[4] B25D *13/00*

U.S. Cl. 173—91 **22 Claims**

1. An electromagnetic impact pile driver adapted to drive an elongated element into the ground in a substantially vertical orientation, said electromagnetic pile driver comprising:

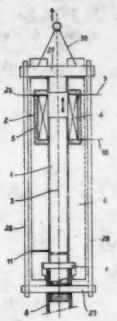
an upright vertically elongated body having a vertical channel;

an electromagnetic coil fixedly mounted on said body and surrounding said channel;

means for periodically storing a predetermined amount of electrical energy;

means for periodically applying said amount of electrical energy to said coil so that, for each application, said coil is traversed by a high energy current pulse and passes successively, under the effect of said current pulse, to an energized state and thereafter to a de-energized state;

a mobile electromagnet core having an upper end and forming an impact mass guided in said channel, said core being positioned with respect to said coil so as to be electromagnetically attracted and lifted in a direction opposite to the



elongated element at a predetermined levels, against gravity, in said energized state, and thereafter to free fall by gravity in said de-energized state, said upper end being located above said coil at said predetermined level;

means for controlling the amount of electrical energy stored and applied to said coil to vary said predetermined level to which said core is lifted with each of said energized states; and

a pile-driving anvil axially mobile with respect to the elongated body and adapted to be positionable on said elongated element, to receive an impact from said core in said de-energized state of the coil and to transfer this impact to said elongated element with sufficient energy to drive said element into the ground and to produce a significant displacement of this element.

4,799,558

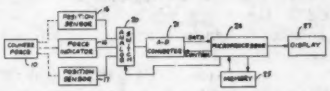
DIGITAL LOAD SHIFT COMPENSATION

Neil C. Griffen, Westerville, Ohio, assignor to Toledo Scale Corporation, Worthington, Ohio

Filed Jun. 12, 1987, Ser. No. 61,273

Int. Cl.[4] G01G *19/40, 3/14, 21/24*

U.S. Cl. 177—25.14 **21 Claims**



1. Weighing apparatus compensated for load position comprising a counterforce, transducer means on said counterforce for producing outputs representing the magnitudes of loads applied to said counterforce, load position sensing means mounted on said counterforce to produce outputs representing the positions in at least one of two mutually transverse direc-

tions of loads applied to said counterforce, means for storing a mathematical expression for load compensated for load position as a function of load position and magnitude, and means for utilizing said expression and said load position outputs and said load magnitude outputs to provide load indications independent of the positions in at least said one direction of the loads applied to said counterforce.

4,799,559

MEASURING APPARATUS

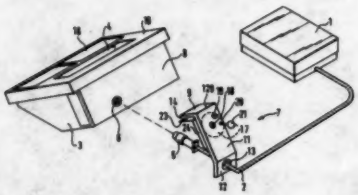
Herbert Mürdter, Albstadt, and Adolf Ast, Messstetten, both of Fed. Rep. of Germany, assignors to August Sauter GmbH, Albstadt, Fed. Rep. of Germany

Filed Mar. 24, 1988, Ser. No. 172,442

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1987, 3709717

Int. Cl.[4] G01G *23/02*

U.S. Cl. 177—124 **20 Claims**



1. In a measuring apparatus including a sensor producing an output signal as a digital value directly representing the measured quantity and its units of measure, a separate readout device for the measured quantity disposed physically remote from the sensor, a signal line connecting the sensor to the readout device for conducting the output signal to the readout device, a visual display on the readout device for displaying the measured quantity and its units of measure, and an identification plate for displaying the technical measurement parameters of the sensor, the improvement wherein;

the identification plate is releasably mounted on the readout device; and

a connecting member is provided unremovably linking said identification plate to the sensor.

4,799,560

PORTABLE MAILING SCALE

Yukoh Kobayashi, 1118 S. Lake St., Apt. 8, Los Angeles, Calif. 90006

Filed Sep. 14, 1987, Ser. No. 95,762

Int. Cl.[4] G01G *19/56, 1/02*

U.S. Cl. 177—148 **20 Claims**

1. A balanced weight-scale, comprising:

a body;

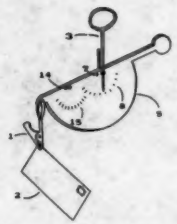
means for supporting said body in the air, while providing a fulcrum around which said body can rotate freely according to the gravitational force;

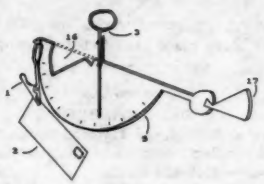
means for holding an object to weigh at one side of said body;

a legend whereon the weight of said object can be read; and

a pointer for pointing the weight of said object on said legend;

wherein said pointer is loosely fixed to said means for supporting the body of the scale when in use, whereby the zero-position of said pointer relative to said legend can be adjusted by





changing the pointing direction of said pointer at the fixed point.

4,799,561

ELECTRONIC BALANCE

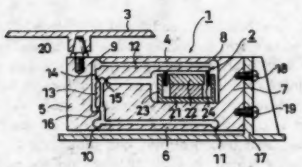
Akira Komoto, Otsu, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

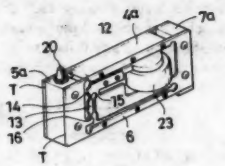
Filed May 9, 1988, Ser. No. 191,411

Claims priority, application Japan, May 9, 1987, 62-113133; Jun. 26, 1987, 62-98853

Int. Cl.[4] G01G *3/08, 7/00*

U.S. Cl. 177—229 **5 Claims**





1. An electronic balance comprising:

a weighing pan;

an electronic weight sensing means; and

a force transmitting means for transmitting a force due to a weight loaded on said weighing pan to said electronic weight sensing means, said force transmitting means being constituted in one metallic body from which are integrat-

edly cut out a Roberval mechanism, a lever and a connecting portion connecting said lever to said Roberval mechanism.

4,799,562

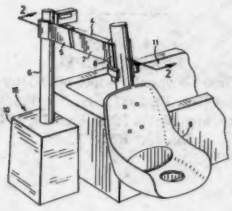
CANTILEVER WEIGHING APPARATUS

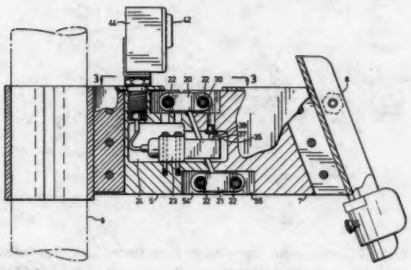
Donald L. Burrows, Utopia, and Edward J. Milne, Markham, both of Canada, assignors to Everest & Jennings Canadian Limited, Concord, Canada

Filed Dec. 24, 1987, Ser. No. 137,568

Int. Cl.[4] G01G *3/08, 19/52*

U.S. Cl. 177—229 **41 Claims**





1. A cantilever arm weighing apparatus, comprising:

a first arm portion attached to a support structure;

a second arm portion attached to the first arm portion by two linkage members disposed in parallel one above the other, said linkage members being positioned within forks formed in the first and second arm portions;

means for attaching to the second arm portion a support an object to be weighed;

a load cell attached to the first arm portion and extending from the first arm portion to the second arm portion;

bearing means coacting with the load cell and the second arm portion for receiving a load from the second arm portion and transmitting it to the load cell; and

a readout device attached to the load cell, the device providing a readout in response to a load being applied to the load cell through the bearing means.

4,799,563

DEVICE FOR MOUNTING AN IMPLEMENT ON A TRACTOR

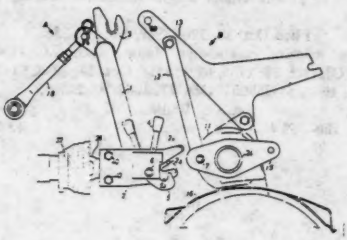
Hiroyasu Yukino, Chaya, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 6, 1987, Ser. No. 117,581

Int. Cl.[4] B60K *25/00*

U.S. Cl. 180—14.4 **5 Claims**

1. A device for mounting an implement on a tractor wherein a body of the tractor is provided with an upwardly and downwardly movable hitch having an upper hitch link and two horizonally spaced lower hitch links and an implement having attachment means for attachment to said upper hitch link and said spaced lower hitch links, characterized in that a drive shaft associated to the hitch and drivingly connected to a PTO shaft of the tractor is supported in substantial horizontal alignment with and substantially intermediate said lower hitch links by said hitch and is operable to transmit a power to an input shiaft of the implement through shaft coupling means.



4,799,564

ELECTRIC WHEEL DRIVE

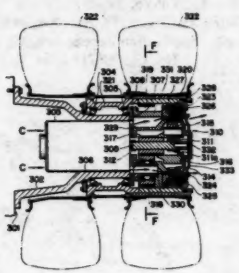
Katsuhiko Iijima, and Kazuo Itami, both of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jan. 27, 1987, Ser. No. 7,009

Claims priority, application Japan, Jan. 29, 1986, 61-15746; Mar. 20, 1986, 61-63049; Mar. 20, 1986, 61-63051; Mar. 24, 1986, 61-65150

Int. Cl.[4] B60K *7/00*

U.S. Cl. 180—65.5 **3 Claims**



1. An electric wheel drive, comprising a drive housing having an interior side facing the wheeled body and an opposite exterior side facing away from the wheeled body, a drive motor in said drive housing having a drive shaft facing said exterior side, a second stage star-type reduction gear and a first stage planetary reduction gear connected to said drive shaft and located adjacent said exterior side, a hub surrounding said drive housing, bearing means rotatably supporting said hub located adjacent said motor closer to said interior side than said first and second stages, and a pressure-oil pump for lubrication directly mounted to a sun gear of said planetary reduction gear coupled to said drive shaft.

4,799,565

FUEL SUPPLY SYSTEM FOR OFF-ROAD VEHICLE

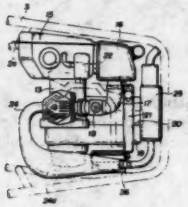
Akio Handa; Eiji Hosoya; Kousei Mizumoto; Makoto Ishiwatari, and Takanori Okuma, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 113,236

Claims priority, application Japan, Oct. 23, 1986, 61-162962[U]; Oct. 24, 1986, 61-253348; Oct. 24, 1986, 61-253349; Oct. 27, 1986, 61-255051; Oct. 27, 1986, 61-255052

Int. Cl.[4] B60K *15/02*

U.S. Cl. 180—69.4 13 Claims



1. A fuel supply system in an off-road vehicle including a vehicle frame, front and rear wheels mounted on front and rear portions of the vehicle frame and having wide tires, respectively, an engine mounted on the rear portion of the vehicle frame, and an exhaust pipe extending from the engine and disposed on one side of the engine transversely of the vehicle frame, said fuel supply system comprising:

a fuel tank assembly disposed on the other side of said engine transversely of the vehicle frame and forwardly of a drive shaft of said rear wheels; and

an air cleaner case disposed rearwardly of said fuel tank assembly ;

said engine being disposed adjacent to said drive shaft of said rear wheels, and the vehicle frame comprises a pipe frame.

4,799,566

MOTOR-OPERATED POWER STEERING APPARATUS

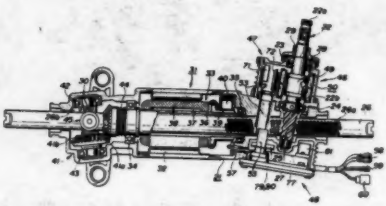
Yasuo Shimizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1988, Ser. No. 146,662

Claims priority, application Japan, Jan. 22, 1987, 62-13459

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 5 Claims



1. A motor-operated power steering apparatus comprising:

a steering force transmitting a manual steering force applied to a steering wheel to a steerable road wheel;

an electric motor for generating assistive power;

an auxiliary power transmitting mechanism for transmitting the assistive power generated by said electric motor to said steering force transmitting mechanism;

motor control means for controlling operation of said electric motor in response to the manual steering force;

first direction detecting means disposed in said steering force transmitting mechanism for detecting the direction of said manual steering force and generating a signal indicative of said direction of the manual steering force;

second direction detecting means for detecting the direction of the assistive power generated by said electric motor and generating a signal indicative of said direction of the assistive power;

ascertaining means for ascertaining whether the direction of the manual steering force and the direction of the assistive power are the same as each other based on the signals from said first and second direction detecting means; and

assistive power interrupting means for de-energizing said motor when the direction of the manual steering force and the direction of the assistive power are different from each other.

4,799,567

FRAME MOPED

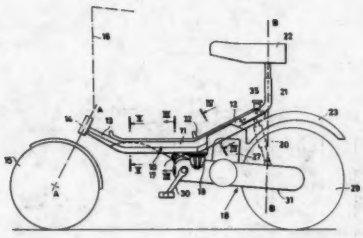
Bruno Gaddi, Viale Giovanni Pisano, 60, 56100 Pisa, Italy

Filed Oct. 19, 1987, Ser. No. 109,765

Claims priority, application Italy, Oct. 24, 1986, 23480/86[U]

Int. Cl.[4] B62K *11/00*

U.S. Cl. 180—205 7 Claims



1. A moped comprising a beam-type frame having a substantially horizontal central portion, to one end of which there is connected a hub support that carries the articulation of the front-wheel fork, and the other end of which extends rearwardly and diagonally upwardly at an angle of less than 45° to the horizontal thereby to form an inclined rear portion carrying at its upper end support elements for a saddle and a rear mudgard, the central portion having a generally flat upper surface adapted, as a result of its width and length, to constitute a footrest, and said inclined rear portion also having a generally flat upper surface approximately equal in size to that of said central portion, whereby as a result of its dimensions and inclination at an angle of less than 45°, said inclined portion is adapted selectively to constitute either a luggage carrier or a second footrest.

4,799,568

FRONT COVER FOR MULTI-WHEELED VEHICLES

Koichi Tanaka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 894,350, Aug. 7, 1986, abandoned. This application Dec. 22, 1987, Ser. No. 136,533

Claims priority, application Japan, Aug. 7, 1985, 60-120999[U]; Oct. 4, 1985, 60-221588; Oct. 4, 1985, 60-221515

Int. Cl.[4] B62J *17/06;* B60K *11/02*

U.S. Cl. 180—219 12 Claims

1. A multi-wheeled vehicle including a frame having a head pipe, a steering mechanism operatively mounted to said head pipe and connecting a handlebar to a vehicle front wheel, a headlight mounted on said frame for directing light forwardly of said head pipe, and a vehicle front cover attached to said frame, said vehicle front cover comprising:

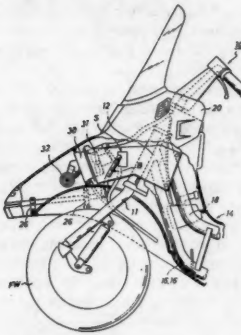
a front panel overlying said front wheel;

a windshield positioned forwardly of said steering mechanism;

a light-pervious cover interposed between said front panel and said windshield forwardly of said headlight;

said front panel, said windshield and said light cover each being upwardly and rearwardly inclined to define substantially aerodynamically continuous surface means spaced forwardly of said frame;

oppositely spaced side panels extending from lateral sides of



said front panel, windshield and light cover to form an enclosure enclosing said head pipe, steering mechanism and said headlight;

means forming an instrument panel positioned forwardly of said steering mechanism and extending between said side panels, said means containing an opening accommodating passage of said steering mechanism; and

a removable rear panel interposed between said handlebar and said steering mechanism forming a barrier restricting air flow from said enclosure.

4,799,569

MOTORCYCLE

Shigeru Hattori, Tokyo, and Toshimitsu Asakura, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

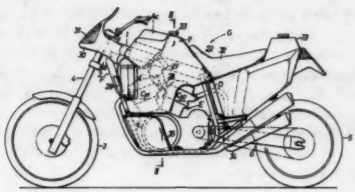
Filed Aug. 21, 1986, Ser. No. 899,063

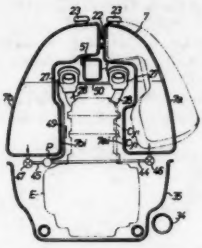
Claims priority, application Japan, Aug. 23, 1985, 60/185196; Oct. 7, 1985, 60/223097; Oct. 16, 1985, 60/230853

Int. Cl.[4] B62J *35/00*

U.S. Cl. 180—219 **9 Claims**

1. A motorcycle comprising a body frame, an engine on the body frame and a fuel tank carried on and straddled over a main frame of the body frame, said main frame extending longitudinally of the body of the motorcycle, wherein said fuel tank is divided into left and right side sections which are hung down to a position sideward of a cylinder of the engine and a carburetor for the engine, said left and right side sections being connected together at upper parts thereof by hinge means such





that at least one of the side sections is pivotable upwards around said hinge means.

4,799,570

ARRANGEMENT IN VEHICLE HYDRAULIC SERVICE BRAKE SYSTEMS

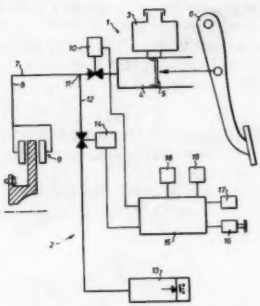
Lars Andersson, Sundbyberg, and Bengt Kamph, Stockholm, both of Sweden, assignors to Autostop AB, Lidingo, Sweden

Filed Oct. 22, 1986, Ser. No. 921,455

Claims priority, application Sweden, Oct. 22, 1985, 8504977

Int. Cl.[4] B60K *28/00, 19/02;* B60T *7/12*

U.S. Cl. 180—275 **12 Claims**



1. In a vehicle having a hydraulic brake circuit in which a master cylinder is connected to wheel brakes of the vehicle for applying pressurized hydraulic fluid to the vehicle wheel brakes upon depression of a brake pedal of the vehicle, an arrangement for applying the vehicle wheel brakes when an obstacle is encountered in the path of the vehicle, said arrangement comprising:

means for detecting an obstacle in the path of the vehicle,

a hydraulic pressure accumulator linked to said hydraulic brake circuit by way of valve means, said valve means

having a normal condition for connecting said master cylinder to said wheel brakes and to said hydraulic pressure accumulator such that depression of said brake pedal causes application of the wheel brakes and hydraulic fluid pressure build up in said hydraulic pressure accumulator, and a second condition for preventing back-flow of hydraulic fluid into said master cylinder and connecting said hydraulic pressure accumulator to said wheel brakes such that the wheel brakes are applied by pressurized hydraulic fluid from said hydraulic pressure accumulator, and

control means responsive to said obstacle detecting means for switching said valve means from said normal condition to said second condition.

4,799,571

MOTOR VEHICLE TRANSMISSION MOUNTING SYSTEM

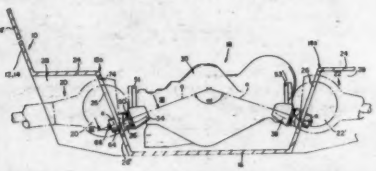
Stefan Bopp, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 9, 1987, Ser. No. 106,225

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1986, 3637522

Int. Cl.[4] B60K *5/04, 17/22*

U.S. Cl. 180—294 **21 Claims**



1. A motor vehicle axle transmission mounting system wherein a transmission is located within a trough-shaped self-supporting bodywork chassis between vehicle bodywork side walls located between driven wheels of a vehicle axle having independent wheel suspensions, wherein the axle transmission is secured solely by acceptance element means which are engaged in socket means of casing part means of the axle transmission and wherein said accepting element means are secured outside of the bodywork side walls and extend through openings therein, and wherein the casing part means are located between the bodywork side walls.

4,799,572

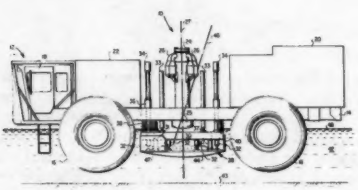
AMPHIBIOUS SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 11, 1987, Ser. No. 48,332

Int. Cl.[4] G01V *1/04*

U.S. Cl. 181—114 **9 Claims**



1. Apparatus for generating seismic waves in the earth comprising:

(a) a transport vehicle adapted for navigation in a fluid environment;

(b) a target plate;

(c) a lift means adjustably secured between the vehicle and the target plate for alternately raising the target plate for transport and lowering the target plate to an impact position wherein the target plate is in continuous contact with a desired subsurface of such fluid environment;

(d) an impact mass;

(e) actuator means carried on the vehicle in operative engagement with the impact mass for propelling the impact mass from a firing position along a downward path to collide with the target plate in such impact position and for thereafter returning the impact mass to such firing position;

(f) resilient means interposed between the lift means and the target plate so as to provide limited freedom of movement to the target plate relative to the lift means along the downward path against the subsurface responsive to the collision between the target plate and the impact mass and for limiting upward movement of the target plate with respect to the lift means; and

(g) extensive fluid-barrier means secured between the vehicle and the target plate so as to isolate the space between the impact mass and the target plate from the fluid environment while accommodating the operation of the lift means and such limited movement of the target plate.

4,799,573

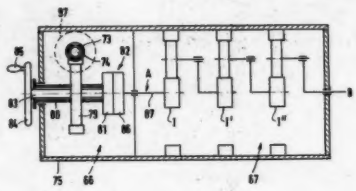
ADJUSTABLE PERSONNEL PLATFORM

Andrej Simnovec, Recklinghausen; Bernhard Meinken, Haltern, and Friedrich Schwing, Herne, all of Fed. Rep. of Germany, assignors to Friedrich Wilh Schwing GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 565,116, Dec. 23, 1983, abandoned. This application Oct. 2, 1987, Ser. No. 105,961

Int. Cl.[4] B66F *11/04*

U.S. Cl. 182—2 **7 Claims**



1. Apparatus for mounting an adjustable personnel platform to the end of the boom means of a lift device for maintaining the platform in a horizontal orientation over a wide range of movement of said boom means, said apparatus comprising:

a carrying arm (42) supporting the adjusting personnel platform (38);

a reversible motor (97);

a speed changing drive (66,67) mounted on the end of the boom means and interposed between said motor (97) and said carrying arm for rotating said carrying arm and platform with respect to the boom means by means of said motor, said drive having a worm gear input stage (66) driven by said motor (97), said input stage driving a planetary gear output stage (67) through a plurality of direction controlling couplings (81, 86) that arrest the rotation of the carrying arm (42) in both directions of rotation and that permit rotation of the carrying arm (42) in a respective one of the rotary directions of said motor (97) when driven in such direction by said motor; and

control means having inclination sensing means (92) for sensing the orientation of the platform, said control means

being coupled to said motor for energizing same responsive to the sensed orientation of the platform.

4,799,574

LUBRICATION DEVICE

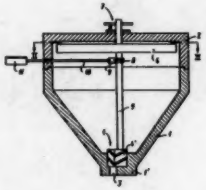
Johan C. M. Bras, Tricht, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Jun. 12, 1987, Ser. No. 61,696

Claims priority, application Netherlands, Jun. 25, 1986, 8601666

Int. Cl.[4] F16N *7/38*

U.S. Cl. 184—27.1 **5 Claims**



1. A device for controllably supplying a lubricant to a mechanism, comprising a container for holding a quantity of lubricant and having a first end and a second end opposite to the first end, said container having at its second end a discharge channel for the lubricant, and means for controllably expelling lubricant from the container through the discharge channel, said expelling means comprising:

a rotatably-mounted shaft extending within the container from the first to the second end and being accessible outside of the container first end,

a displacement pump wholly within the container adjacent the second end, said pump having a rotary part mounted in the discharge channel, said shaft at the container second end being drivingly coupled to the displacement pump such that rotation of the shaft in one direction causes rotation of the rotary part and expulsion of lubricant,

a spiral spring mounted within the container and having one end fixed to the container and its other end fixed to the shaft and when coiled by winding up in a direction opposite to said one direction being capable of rotating the shaft in the said one direction,

means connected to the shaft for releasably locking the shaft against rotation in the said one direction,

means on the outside of the first end of the container and connected to the shaft for coiling the spring in said opposite direction, said spring when coiled causing the shaft to rotate in said one direction when the shaft is unlocked, and

means accessible externally to the container and connected to the locking means for selectively unlocking and releasing the shaft whereby the coiled spring causes the shaft to rotate expelling lubricant by the action of the rotary part of the displacement pump through the discharge channel.

4,799,575

HYDRAULICALLY CONTROLLED DISK BRAKE WITH SERIAL FLUID FLOW

Wilhelm Kroniger, Friolzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1987, Ser. No. 116,154

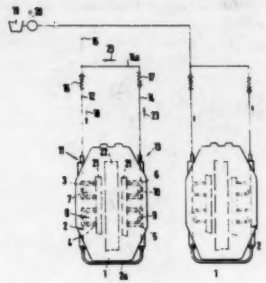
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1986, 3640056

Int. Cl.[4] F16D *55/02, 65/14, 65/78*

U.S. Cl. 188—71.6 **10 Claims**

1. A hydraulically controlled disk brake of a motor vehicle having a plurality of hydraulically actuable brake pistons that are arranged in a caliper and are guided in a plurality of respective cylinders, said brake comprising:

duct means for continuously and serially leading brake fluid from an inlet to a first of said plurality of cylinders and on to the last of said plurality of cylinders and from there to an outlet opening; and



first and second check valve means for said inlet and said outlet openings, one said check valve means being arranged in front of said first cylinder and another said check valve means being arranged behind said last of said cylinders.

4,799,576

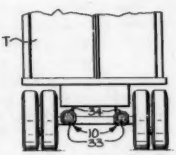
PROTECTIVE DEVICE TO PREVENT PROJECTION OF A HEAVY COILED SPRING AWAY FROM AN AIR BRAKE HOUSING

Timothy D. Walker, Wilkesboro, and Steven A. Dancy, Millers Creek, both of N.C., assignors to Carl Livingston Dancy, Sr., Millers Creek, N.C.

Filed Jun. 30, 1987, Ser. No. 68,624

Int. Cl.[4] F16D *63/00;* F16F *9/00, 1/06;* F01B *19/00*

U.S. Cl. 188—84 **6 Claims**



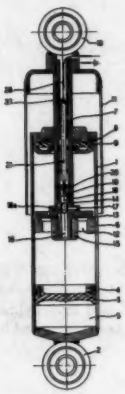
1. In a wheeled vehicle such as a tractor pulled trailer equipped with an air brake having an elongate housing generally disposed lengthwise of the trailer and containing a transversely disposed diaphragm in a medial portion thereof with air pressure communicating with the front side of the diaphragm and a heavy coiled spring positioned in opposition to the air pressure on the rear side of the diaphragm, the combination therewith of a protective device mounted adjacent to and rearwardly of said housing so as to be in the path of said coiled spring in the event of rupturing of the housing, as from corrosion, and releasement of the spring therefrom, to prevent the spring from being projected rearwardly away from the housing, and wherein said protective device includes a transversely disposed body portion and mounting means extending alongside of opposite sides of said body portion.

4,799,577

TELESCOPIC HYDRAULIC SHOCK ABSORBER WITH TEMPERATURE SENSITIVE WIRE TO CONTROL DAMPING

Christian B. de Carbon, 64 Boulevard Maurice Barrés, F-92200 Neuilly-sur-Seine, France

Filed Feb. 17, 1987, Ser. No. 15,294
Claims priority, application France, Feb. 18, 1986, 86 02188
Int. Cl.[4] F16F *9/52, 9/46;* G05D *15/00;* F16K *31/00*
U.S. Cl. 188—277 9 Claims



1. A telescopic hydraulic shock absorber with controlled damping, comprising a cylinder containing a reciprocable piston connected to an end of a hollow piston rod, the piston having at least one restricted flow passage, an elastic flap on the piston for controlling the flow passage, the piston having a further flow passage, a remote-controlled axially movable shut-off means associated with the further passage for controlling the flow of hydraulic fluid to pass from one side of the piston to the other during piston movement, a pusher rod connected to said shut-off means, actuating means located within said hollow piston rod and connected to said pusher rod for controlling the axial movement thereof, said actuating means comprising an elongate member axially movable within said hollow piston rod and connected at one end to said pusher rod, a stop having an opening and being fixed to said piston rod, said actuating member extending through the stop opening, an elongated wire of metallic memorizing material and capable of changing the length thereof at a predetermined conversion temperature, one end of said wire being connected to said stop such that a change of length of said actuating member extending through the stop opening controls the shut-off means.

4,799,578

APPARATUS FOR PREVENTING HEAT DAMAGE IN AN ELECTROMAGNETIC CLUTCH

Takashi Matsushita, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Feb. 3, 1987, Ser. No. 10,466
Claims priority, application Japan, Feb. 3, 1986, 61-14356; Feb. 28, 1986, 61-29875
Int. Cl.[4] F16D *27/10*
U.S. Cl. 192—84 C 13 Claims

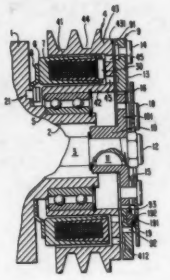
10. An electromagnetic clutch comprising:

a first rotatable member formed of magnetic material and rotatably supported on a bearing, said first rotatable member having an axial end plate member forming an axial end surface;

a second rotatable member comprising an armature plate formed of magnetic material and facing the axial end surface of said first rotatable member with a predetermined axial air gap therebetween;

an electromagnetic device disposed within said first rotatable member and associated with said first rotatable member for attracting said armature plate into contact with said axial end surface to transmit torque between said first rotatable member and said second rotatable member;

disconnecting means for disconnecting said electromagnetic device in response to the temperature of said electromagnetic clutch to separate said axial end surface and said armature plate so that torque cannot be transferred therebetween; and



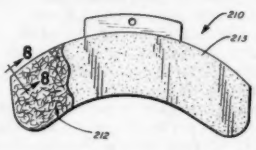
increasing means for increasing the size of said axial air gap in response to predetermined temperature of said electromagnetic clutch such that said electromagnetic device will be unable to attract said armature plate to said axial end surface if said disconnecting means reconnects said electromagnetic device.

4,799,579

CLUTCH AND BRAKE FRICTION ASSEMBLY AND METHOD OF MAKING SAME

Paul A. Myers, 2807 Country Club Rd., and Charles O. Jensen, 608 Indian Springs, both of Crawfordsville, Ind. 47933

Filed Nov. 18, 1985, Ser. No. 798,979
Int. Cl.[4] F16D *69/04*
U.S. Cl. 192—107 M 3 Claims



1. A clutch and brake friction assembly suitable for use on heavy duty vehicles such as over-the-highway trucks and the like comprising

(a) a metallic shoe having an exposed continuous planar backing surface;

(b) a first lamina overlying said backing surface and comprising a multitude of metallic fibers agglomerated in overlapping fashion and metallurgically fused to one another and to said backing surface so as to form a plurality of interstices and a multitude of protuberances outwardly-extending from said backing surface; and

(c) a second lamina of friction material overlying said first lamina, juxtaposed portions of said second lamina filling said interstices and being mechanically interlocked with

the outwardly-extending protuberances so as to secure said second lamina to said first lamina and said backing surface.

4,799,580

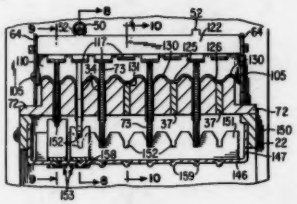
COIN CHUTE CONSTRUCTION

Mitchell A. Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.

Division of Ser. No. 623,574, Jun. 22, 1984, Pat. No. 4,640,405. This application Nov. 10, 1986, Ser. No. 928,878

Int. Cl.[4] G07F 5/06

U.S. Cl. 194—235 **9 Claims**



1. In a coin chute construction for a dispensing machine which requires at least one coin of predetermined size and valuation to initiate one operation of said machine for one item of goods or service, said construction comprising, a support body, a slider supported on said body for reciprocation in a rectilinear path between a fully retracted inoperative position and a fully advanced operative position thereof, at least one pocket in said slider for receiving said coin, said pocket being defined by surface means for supporting said coin so that upon moving said slider toward said operative position said coin is moved therewith to a test position and then toward said operative position, test means at said test position for testing said coin for acceptability as to valuation and genuineness and when acceptable allowing full movement of said slider to said operative position enabling said slider to initiate said one operation of said machine, means operative upon failure of said coin to satisfy the test provided by said test means at said test position to preclude said full movement to said operative position, and providing means for providing movement of said coin away from and then back toward said rectilinear path during movement of said slider from said inoperative position to said test position, said providing means comprising baffle means and cooperating yieldable spring means, the improvement in which said support body comprises a mounting plate, said baffle means has a first convoluted control surface, said slider comprises a second convoluted control surface spaced a precise close distance away from said first control surface while still allowing unobstructed reciprocation of said slider, said second convoluted surface meshes precisely with said first convoluted surface, and said convoluted surfaces serve to prevent shims from being used effectively to bypass the function of said test means.

4,799,581

APPARATUS FOR LOADING SPARE WHEELS ON VEHICLE BODIES

Hiroshi Fujii, Higashihiroshima, Japan, assignor to Mazda Motor Corporation, Japan

Filed Nov. 18, 1987, Ser. No. 122,184

Claims priority, application Japan, Nov. 19, 1986, 61-177987[U]

Int. Cl.[4] B65G 43/00

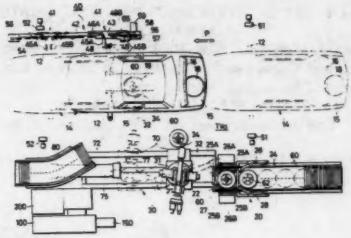
U.S. Cl. 198—341 **8 Claims**

1. An apparatus for loading a spare wheel on a vehicle body comprising;

a carrier for supporting and transporting the vehicle body including a hanger mounted on a conveyor of the overhead type for continuously conveying said vehicle body by said hanger.

a robot operating under predetermined working conditions to load the spare wheel on a predetermined portion provided in the vehicle body supported and transported by said carrier,

speed detecting means including a movable mechanism including an engaging means for temporarily engaging with said hanger on the vehicle body conveying device to move together with the carrier and for detecting a speed



of transportation of the vehicle body based on a speed of movement of the movable mechanism, said engaging means comprising a pair of engaging arms each provided with an end portion for contacting said hanger, said engaging arms facing each other with a portion of said hanger between respective end portions of said engaging arms upon engagement with said hanger,

robot moving means for shifting said robot along a direction of transportation of the vehicle body at a speed determined in response to the speed of transportation of the vehicle body detected by said speed detecting means.

4,799,582

PALLET EXCHANGING APPARATUS FOR MACHINE TOOL

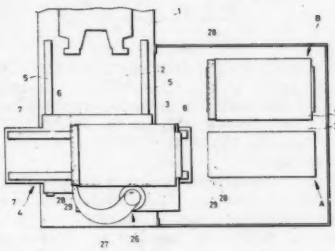
Saburo Itoh, Fukui, Japan, assignor to Matsuura Machinery Corporation, Fukui, Japan

Filed Aug. 12, 1987, Ser. No. 85,033

Claims priority, application Japan, Feb. 23, 1987, 62-037843

Int. Cl.[4] B65G 47/00

U.S. Cl. 198—346.1 **1 Claim**



1. A pallet exchanging apparatus for a machine tool in which the pallet loaded with the machined workpieces and placed on the table of said machine tool is exchanged with the pallet loaded with the workpieces to be machined and placed at the waiting position, comprising a transmission device connected to either of the table and the means for driving said table and adapted to output rotational movement and a speed-up device connected to said transmission device and adapted to provide

said pallet with the linear movement with higher speed and larger stroke than those of the linear movement of said table, said transmission device comprising a rack secured to a stationary member, an output gear operatively connected to said rack and a shaft rotatably and axially movably operatively supported by said table for supporting said output gear and for connecting with said speed-up device and said speed-up device comprising a lever arm secured to said output shaft and a roller supported by said lever arm and being engageable with the pallet.

4,799,583

AUTOMATIC DIRECT SOFT COOKIE LOADING APPARATUS

William J. Simelunas, Glen Rock; Henry N. Shoiket, Rutherford, and Celso Espejo, Chatham, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 682,244, Dec. 17, 1984, Pat. No. 4,662,152. This application Sep. 30, 1986, Ser. No. 913,845

Int. Cl.[4] B65G *47/26*

U.S. Cl. 198—418.1 **16 Claims**

1. An apparatus for handling lightweight articles comprising:

an accumulator station which receives articles, said accumulator station including a means for selectively releasing articles, whereby columns of articles are formed, a means for conveying articles from said means for selectively releasing articles, a means for conveying articles to said means for selectively releasing articles, a plenum located adjacent the means for selectively releasing articles and for directing air only on a foremost article in a column to force the foremost article downwardly against the means for conveying articles and to prevent hopping of the article over said means for selectively releasing articles, and a means for sensing articles accumulated by said means for selectively releasing articles;

whereby articles are selectively released to said means for conveying articles from said means for selectively releasing articles and air is directed on said lightweight articles to prevent bouncing or hopping relative to the means for conveying articles.

4,799,584

DRIVE MECHANISM FOR BUCKET ELEVATORS

Hendrik Hartsuiker, Clifton, N.J., and Dorcel W. Knapp, Fults, Ill., assignors to Continental Grain Company, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,229

Int. Cl.[4] B65G *17/36, 23/44*

U.S. Cl. 198—709 **19 Claims**

1. A bucket elevator, for lifting a granular bulk material, having a material input point and a material discharge point above said material input point comprising,

a cylindrical head pulley mounted for rotation near said discharge point;

a cylindrical boot pulley mounted for rotation near said input point;

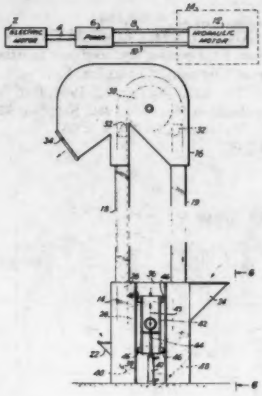
a boot housing enclosing said boot pulley;

a flexible belt entrained about said head pulley and said boot pulley;

a plurality of buckets attached to said belt;

a hydraulic drive motor mounted within said boot pulley for rotationally driving said boot pulley;

a pump fluidically connected to said hydraulic drive motor, wherein said pump is situated near ground level away from said bucket elevator outside said boot housing; and



an electric drive motor connected to drive said pump, wherein said electric drive motor is situated near ground level away from said bucket elevator outside said boot housing.

4,799,585

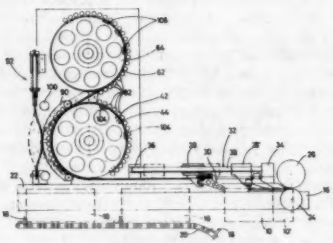
CONVEYOR DEVICE FOR WORKPIECES

Peter Gysi, Bellikon, Switzerland, assignor to ELPATRONIC AG, Switzerland

Filed Jun. 2, 1987, Ser. No. 57,330

Int. Cl.[4] B65G *25/00*

U.S. Cl. 198—743 **10 Claims**



1. A conveyor device workpiece having

a catch carrier (**28, 28'**) which is reciprocal along a guide (**32**),

at least one conveying catch (**30**) which is pivotably mounted on the catch carrier (**28, 28'**), and

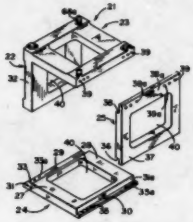
a transmission which connects the catch carrier (**28, 28'**) to a rotary drive, characterized in that the transmission comprises at least one sheave (**44, 64**) having a central axis and being reversibly rotatable in opposite directions about the axis means for reversibly rotating the at least one sheave about said central axis, and at least one flexibly resilient band (**42, 62**) which is secured by one of its ends to the sheave, it wrapped partially around the sheave to move with the reversible rotations of the sheave and is secured by its other end to the catch carrier of the sheave and is catches whereby the carrier or catches are moved backward and forward on the guide with the reversible sheave rotations.

4,799,586

WORKPIECE SUPPORT FOR AUTOMATED TOOLING

Carl R. Kutzli, Highland, and James D. Rutter, Garden City, both of Mich., assignors to Agnew Machine Company, Highland, Mich.

Continuation-in-part of Ser. No. 637,861, Aug. 6, 1984, Pat. No. 4,598,816. This application May 7, 1986, Ser. No. 860,457
The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.
Int. Cl.[4] B65G 37/00
U.S. Cl. 198—803.01 7 Claims



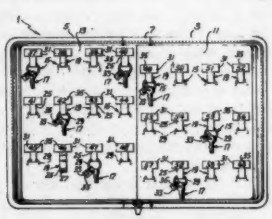
1. A fixture for supporting work pieces for automated machining, said fixture being cuboidal in shape and providing tool access on a plurality of sides, said fixture having a rigid primary body member having a pair of legs arranged at right angles to each other and forming two panels of the fixture; a second body member forming a third panel of said fixture; a third body member forming a fourth panel of said fixture; means detachably connecting said second and third body members to each other and to said primary body member for reinforcing said primary body member; work holder clamping means mounted on the inner face of one of the panels of said primary body member adjacent one edge thereof; work holder stop means mounted on the inner face of the same panel and adjacent an edge thereof opposite from said clamping means; said clamping means and stop means being the only means of locating and anchoring a workpiece to the fixture; locating and indexing means mounted on the exterior face of each of the legs of said primary body member and providing the only locating and positioning means for the fixture, said locating and indexing means being precisely spaced from the geometric center of the cuboidal fixture, said stop means being precisely located with respect to said locating and indexing means.

4,799,587

STORAGE CASE FOR KEYS WITH PLURAL VELCRO RETAINERS

David A. Desanto, 2205 Lydia Pl., Vienna, Va. 22180

Filed Jun. 17, 1986, Ser. No. 875,224
Int. Cl.[4] A45C 11/00
U.S. Cl. 206—37.6 5 Claims



1. An improved storage case for keys comprising:

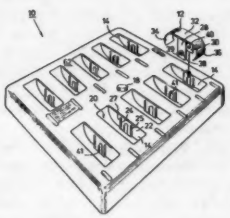
(a) a pair of rectangular members hinged together for pivotal movement between open and folded positions;
(b) means for securing the members in the folded position;
(c) each member including an internal support surface;
(d) a plurality of vertically and horizontally spaced retainers nondetachably secured to each support surface, each retainer for detachably securing an individual key holder;
(e) an individual key holder for detachable connection to each retainer;
(f) each retainer being defined by an elongate strap including a first end attached to the support surface and a free second end, and cooperating Velcro means carried by the first and second ends for permitting their overlapping detachable connection to define a loop for receiving and supporting the separate key holder, whereby the key holder may be quickly secured to or separated from the retainer through connection and disconnection of the first second ends; and
(g) first indicia means carried by each retainer and second indicia means carried by each separate key holder for permitting visual identification and correlation of each separate key holder with respect to its corresponding retainer.

4,799,588

PRESENTATION OR DISPLAY BASE

Klaus Trisl, Wiesbaden, Fed. Rep. of Germany, assignor to Uhrenhandelsgesellschaft mbH, Hamburg, Fed. Rep. of Germany

PCT No. PCT/EP86/00025, § 371 Date Oct. 1, 1986, § 102(e) Date Oct. 1, 1986, PCT Pub. No. WO86/04796, PCT Pub. Date Aug. 28, 1986
PCT Filed Jan. 23, 1986, Ser. No. 942,417
Claims priority, application European Pat. Off., Feb. 21, 1985, 85101879.6
Int. Cl.[4] B65D 1/34; A47F 7/024
U.S. Cl. 206—301 21 Claims



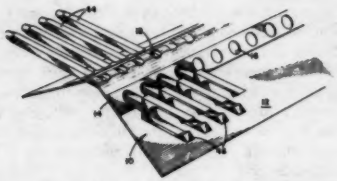
1. A presentation base having a plurality of recesses in the top surface thereof to receive objects, each recess having an internal wall, wherein each said object at least partially surrounds a display holder for mounting in one of said recesses, each display holder having a holding surface to hold said objects for display, said holding surface defined between a pair of edges, at least one projecting section depending from one of said edges, a guideway formed on the internal wall of at least one said recess, said projecting, depending section adapted to fit into a respective guideway, at least one sliding element beneath said top surface of said base, said sliding element adapted to interact with said at least one of said projecting, depending sections, whereby, when said object is arranged on said holding surface and said display holder is inserted in said recess, said object cannot be removed from the display holder.

4,799,589

RESILIENT ELECTRONIC BANDOLIER CARRIER STRIP AND METHOD OF USING THE SAME

Anthony J. Peleckis, Fairfield, Conn., assignor to Bead Chain Manufacturing Co., Bridgeport, Conn.

Filed Aug. 7, 1987, Ser. No. 83,846
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—330 44 Claims



1. A bandolier for use in combination with a plurality of pin-like contact elements for facilitating plating and orientation thereof and delivery thereof to automated insertion apparatus comprising:

an elongated strip-like base member of flexible, resilient and non-conductive material with a layer of conductive material on a portion of at least one side thereof, said elongated base member having a plurality of pairs of spaced apertures spaced longitudinally therealong and in position to permit said base member to be flexed around its longitudinal center line to aflow a pin-like element to be inserted through a selected pair of said plurality of pairs of apertures and achieve electrical contact with said layer of conductive material.

15. A bandolier for use in combination with a plurality of pin-like contact elements for facilitating plating and orientation thereof and delivery thereof to automated insertion apparatus comprising:

an elongated strip-like member of flexible, resilient material, said elongated member having a plurality of pairs of spaced apertures spaced longitudinally therealong, said plurality of pairs of spaced apertures are arranged in two rows whereby one member from each pair of spaced apertures is aligned in one row and the other member of each pair of spaced apertures is aligned in the other row, said spaced apertures in position to permit said elongated strip-like member to be flexed around its longitudinal center line to allow a pin-like element to be inserted through a selected pair of said plurality of pairs of apertures, said elongated strip-like member is made of a conductive material and has a layer of non-conductive material on at least one side thereof.

40. A method of preparing pin-like elements for use in an automated insertion apparatus comprising the steps of:

A. providing a bandolier carrier strip comprised of an elongated strip-like base member of flexible, resilient and non-conductive material with a layer of conductive material on a portion of at least one side thereof, said elongated base member having a plurality of pairs of spaced apertures spaced longitudinally therealong and in position to permit said base member to be flexed around its longitudinal center line to allow a pin-like element to be inserted through a selected pair of said plurality of apertures and achieve electrical contact with said layer of conductive material;

B. flexing at least a portion of said bandolier around its longitudinal center line to generally align a selected one of said pairs of apertures;

C. providing a pin-like element for insertion into said selected one of said pairs of apertures;

D. inserting said pin-like elements through said selected one of said pairs of apertures; and

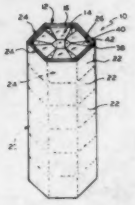
E. releasing the flex in said base member whereby the natural flexural characteristics of said base member releasably retains said pin-like element in electrical contact with said layer of conductive material.

4,799,590

PACKAGE AND METHOD OF PACKAGING

Theodore J. Furman, 1935 Wenonah Ave., Berwyn, Ill. 60402

Filed Feb. 2, 1987, Ser. No. 9,763
Int. Cl.[4] B65D *83/04*
U.S. Cl. 206—390 9 Claims



1. A package, comprising:

a base portion formed of a semi-rigid material so as to be self-supporting, said base portion having a plurality of receptacles each of which is individually separably joined to all adjacent receptacles by a connecting rim flange, said receptacles being disposed in a plurality of columns and rows in said base portion;

said receptacles each having an opening defined by said connecting rim flange and extending from said connecting rim flange on one side thereof;

a cover portion joined to said base portion for entirely covering said receptacle openings, said cover portion including a plurality of cover segments disposed in a plurality of columns and rows;

said cover segments each cooperating with said connecting rim flange of one of said receptacles, said cover segments each being individually separably joined to all adjacent cover segments;

each of said receptacles and cover segments defining a self-contained package unit, said receptacles and cover segments together defining a multi-unit package comprised of a plurality of said self-contained package units disposed in a plurality of rows and columns, each of said self-contained package units being individually separably joined to all adjacent self-contained package units;

said multi-unit package being disposed in a reverse-folded position such that said receptacles extend interiorly thereof in confronting relation with said cover portion facing exteriorly thereof such that remote rows of said receptacles are in closely adjacent relation;

each of said receptacles being tapered so as to be generally wedge-shaped for disposing said multi-unit package in said reverse-folded position, each of said receptacles being defined in part by a pair of tapered side walls joined by a bottom wall;

said receptacles in each of said columns being disposed with corresponding ones of said tapered side walls in common planes, said receptacles in adjacent ones of said columns being disposed with adjacent ones of said tapered side walls in planes intersecting substantially at the corresponding ones of said bottom walls and said bottom walls of adjacent ones of said receptacles being disposed in intersecting planes, said receptacles in each of said rows being disposed with adjacent edges of said bottom walls in abutting relation; and

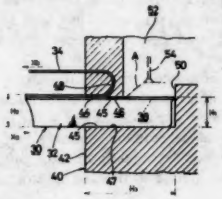
means integrally associated with said cover portion for maintaining said multi-unit package in said reverse folded position as said self-contained package units are removed one-by-one one row at a time from said multi-unit package.

4,799,591

SHEET FILM PACKAGE AND METHOD AND DEVICE FOR LOADING SHEET FILM

Kenji Tajima, and Noboru Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1986, Ser. No. 906,471
Claims priority, application Japan, Sep. 12, 1985, 60-202441; Sep. 12, 1985, 60-202442; Sep. 20, 1985, 60-209762
Int. Cl.[4] B65D *81/30*
U.S. Cl. 206—455 15 Claims



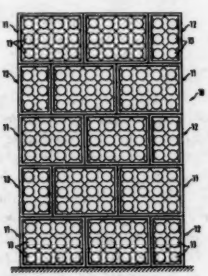
1. A sheet film package comprising:
a tray for storing a stack of sheet films, said tray having a film access opening; and
a flexible cover member peelably attached to said tray in covering relation to said film access opening for shielding the sheet films in said tray from extraneous light, wherein said cover member includes at a distal end a peeling off portion for engaging with a cover member peeling passage defined in an image recording apparatus, the arrangement being such that said cover member is peeled off said tray from said peeling off portion as said tray is inserted into said cover member peeling passage.

4,799,592

STACKABLE CRATES OF SYNTHETIC MATERIAL FOR BOTTLES, ESPECIALLY WINE BOTTLES

Gustav-Adolf Hessmert, Lüdenscheid, Fed. Rep. of Germany, assignor to Gustav Hessmert KG, Lüdenscheid, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,438
Int. Cl.[4] B65D *21/02, 1/24*
U.S. Cl. 206—504 8 Claims



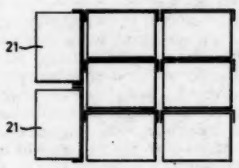
1. A system of stackable crates of synthetic material for bottles, especially wine bottles, comprising a plurality of crates each having compartmental subdivisions each adapted for accommodating one bottle, each crate having opposing first supporting surfaces on opposite end walls for stacking the crates in superimposed arrangement in a vertical position, each crate further having second supporting surfaces at at least two opposite side walls for stacking the crates in a horizontal position, each compartment having portions of elastically deformable material adapted to engage a bottle wall at circumferentially spaced intervals, characterized in that two sizes of crates are provided, the outer periphery of smaller crates being half the length but the same width as the greater ones, the second supporting surfaces of the smaller crates each having interlocking means formed thereon, the second supporting surfaces of each of said greater crates each having pairs of interlocking means, one positioned contiguous to the outer periphery of said second supporting surfaces, the other spaced inwardly towards the center of said second supporting surface, the interlocking means of said pairs being spaced apart a distance equal to the spacing of the interlocking means of the smaller crates and configured to interlock with the interlocking means of the smaller crates so that the stacked crates are interlocked with each other to be restrained against relative horizontal movement and so that the smaller crates may respectively be supported on the supporting surfaces of both halves of either of the opposing side walls of the greater crates and the greater crates may respectively be stacked in a horizontal position while being respectively offset from each other by half a length.

4,799,593

PACKAGING CONSTRUCTION

Jack Lawrence, Longfield, England, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Apr. 29, 1986, Ser. No. 856,983
Claims priority, application United Kingdom, Apr. 29, 1985, 8510849
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—585 7 Claims



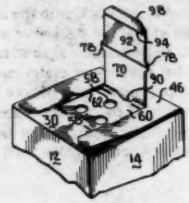
1. A pallet load or other assembly of secondary packs each comprising a single base panel terminating in a free front edge, a single vertical panel, having a free top edge, connected to the base panel by a fold line between the rear edge of the base panel and the bottom edge of the vertical panel, and two vertical flanges, each having one free side edge and free top and bottom edges, each directly connected to opposite side edges of said vertical panel by a fold line extending along a respective side edge of said vertical panel and a respective side edge of a vertical flange, said vertical flanges each having a side-to-side width between said free side edge and respective fold line side edge over at least part of the their top-to-bottom height less than the front-to-rear depth of said base panel, said pack being made of compressive load-bearing material so that said vertical panel and vertical flanges combine to resist deformation under vertical load, wherein each said secondary pack is filled with a group of primary packages and said packs are disposed in the assembly in tiers so that within each tier, the vertical panel of each secondary pack of a substantial number of said packs is adjacent the free front edge of the base panel of the next pack, the vertical panels and flanges of said secondary packs in a given tier combining to support the packs in the next tier with at most only partial reliance on load bearing by said primary packages.

4,799,594

VENDING AND RECLOSURE DEVICE FOR POWDER AND GRANULAR PRODUCTS

Stephen M. Blackman, Westmont, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 930,400, Nov. 14, 1986, Pat. No. 4,706,875. This application Oct. 26, 1987, Ser. No. 112,235
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] B65D 5/08, 5/16, 5/72
U.S. Cl. 206—626 14 Claims



1. A resealable container comprising inner and outer panels disposed in overlapping relation, said inner panel defining a dispensing opening, said outer panel having formed therein a closure flap overlying said dispensing opening, said outer panel having spaced side edges, said closure flap being positioned between said outer panel side edges in spaced relation to said side edges, said closure flap having side edges and ends, said closure flap side edges being defined by lines of weakening, each of said lines of weakening being generally in the form of a straight line having an arcuate intermediate portion projecting transversely towards an adjacent one of said outer panel side edges, one of said ends being defined by a fold line and the other of said ends being separable from said outer panel, whereby said closure flap may be partially separated from and hinged relative to said outer panel to uncover said dispensing opening upon completely rupturing said outer panel along said lines of weakening, said arcuate intermediate portions of said lines of weakening defining along each side edge of said closure flap a projection having a curved outline, and said inner panel having a cut line therein underlying and being generally aligned with each of said lines of weakening with the exception of said arcuate intermediate portions, said cut lines defining on said inner panel shoulders behind which said closure flap projections are engageable in the resealing of said container.

4,799,595

APPARATUS FOR THE CLASSIFYING OF POWDERED BULK MATERIALS

Ulrich Binder, Ennigerloh, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,342
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545691
Int. Cl.[4] B07B 4/00
U.S. Cl. 209—135 4 Claims

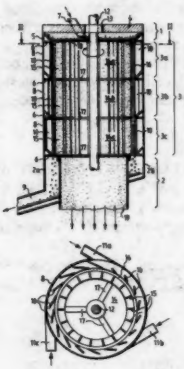
1. An apparatus operative with fine and course material for the classifying of powdered bulk materials, particularly ground clinker, limestone or cement raw material, by air sifting, the apparatus comprising

a material inlet, a cylindrical rotor having vertical rotor blades and a cover plate, a stationary vane ring spaced apart from and surrounding the rotor, a fan located outside of the rotor, a pipe for discharging fine material from the rotor, a separating device located down stream of the discharge pipe, a coarse material discharge for discharging coarse material from the rotor, said rotor and said vane ring defining a sifting space; and wherein

the material to be classified is fed via the material inlet to the cover plate of the cylindrical rotor and is charged into said sifting space, said sifting space having the shape of a cylindrical ring, which space extends between the rotor and the stationary vane ring, a bottom portion of said housing including a receiving ring disposed beneath and mating with said sifting space for receiving course material, said receiving ring encircling said fine material discharge pipe, said course material discharge extending from said receiving ring;

the sifting air is drawn-in through the sifting space approximately tangentially to a cylindrical surface thereof by the fan so that fine material contained in the material charged is conveyed, as a result of suction action which results from a difference between hydrostatic pressure of the fan and a radially outward directed hydrostatic pressure of the rotor;

the sifting air is drawn into the inside of the rotor, discharged through the pipe vertically downward and fed subsequently to the separating device for the separation of



fine material and sifting air, while coarse material descends in the sifting space and is discharged via the housing ring and the coarse material discharge;

the apparatus further comprises a cylindrical housing which encloses the rotor and receives the vane ring; and

the rotor and the cylindrical housing an the vane ring is assembled from a plurality of axial sections disposed one upon the other in axial alignment, the sifting space communicating between individual ones of said sections, there being at least one tangential air inlet connection operatively coupled to said housing at each said section; and wherein

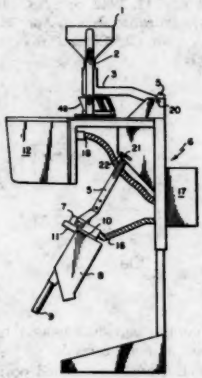
guide vanes of the vane rings of each section are arranged vertically, are each directed at the same acute angle to a respective tangent to a cylindrical surface of the housing, and each successive vane is constructed with a width which increases in the direction of flow, said cover plate being mounted on an uppermost one of said sections, and the sifting air is drawn in via the air inlet in each said section.

4,799,596

PROCESS AND APPARATUS FOR CONTROLLING A SORTING MACHINE

Jos P. Mallant, Hamburg, Fed. Rep. of Germany, assignor to Justus Technik GmbH Industrie-Anlagen, Hamburg, Fed. Rep. of Germany

Filed Mar. 10, 1987, Ser. No. 24,081
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1986, 3614400
Int. Cl.[4] B07C 5/342
U.S. Cl. 209—580 18 Claims



1. Apparatus for sorting a product based on reflected light, comprising:

photoelectric means for receiving light reflected from said product and providing an output signal having value corresponding to a light level of said reflected light, wherein said photoelectric means includes a plurality of channels for parallel processing said product, each channel including a photodetector for receiving light reflected from a corresponding product and for providing an output signal having a value corresponding to a light level of said reflected light;

a comparator for receiving said output signal from said photoelectric means and comparing it with a predetermined range of values, and for providing an eject signal when the value of said output signal is outside said predetermined range of values, wherein said comparator compares each one of the plurality of output signals from the plurality of photodetectors with a corresponding predetermined range of values from a plurality of predetermined range values;

a microprocessor, downstream from said comparator, for receiving said eject signal and providing an eject command corresponding thereto, wherein said microprocessor provides an eject command to eject means which eject the product whose corresponding output signal value is outside the corresponding predetermined range of values;

multiplexer means for receiving said plurality of output signals and providing a multiplexed signal corresponding thereto;

a sample and hold circuit coupled to said multiplexer means;

an analog-to-digital converter coupled to said sample and hold circuit;

a latch buffer coupled to said analog-to-digital converter, and providing an output said comparator; and

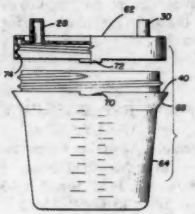
a serial-to-parallel converter coupled to said multiplexer means and to said comparator.

4,799,597

CONTAINER AND NON-REMOVABLE COVER

Ronald A. Mayes, San Anselmo, Calif., and Tipton A. Golias, Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Division of Ser. No. 12,900, Feb. 10, 1987, Pat. No. 4,736,859.
This application Dec. 4, 1987, Ser. No. 128,616
Int. Cl.[4] B65D 41/04
U.S. Cl. 215—250 8 Claims



2. A container comprising:

a beaker having a body portion, said body portion including an upper periphery;

a cover having a top portion, said top portion including a downwardly extending skirt;

first inter-engaging means unitarily formed in said cover and second inter-engaging means unitarily formed on said beaker;

said second inter-engaging means formed on said beaker including a shoulder extending about said periphery, said shoulder including at least one indentation and further wherein said second inter-engaging means formed in said beaker includes formed threads about said periphery and above said shoulder;

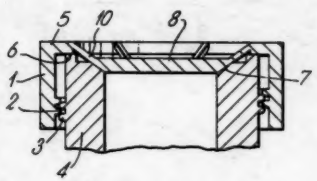
said first inter-engaging means formed in said cover including at least one boss extending downwardly from said skirt, said first inter-engaging means formed in said cover further including formed threads interior of said skirt and adapted to mate with the formed threads about the upper periphery of said beaker, said boss engagable with the at least one indentation so that said cover becomes non-removable without damage to said beaker and said cover when said cover is connected with said beaker.

4,799,598

SELF-SEALING CLOSURE

Robert C. McFadyen, Chester, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 118,681, Nov. 9, 1987, abandoned. This application Jun. 13, 1988, Ser. No. 206,984
Claims priority, application United Kingdom, Nov. 10, 1986, 8626765
Int. Cl.[4] B65D 51/16
U.S. Cl. 215—260 10 Claims



1. A self-sealing container closure adapted to close an open-

ing in a container, comprising a securing portion having a skirt, fastening means on the skirt which co-operates with fastening means on the container to secure the closure over the container opening, an inwardly extending flange at one end of the skirt and a sealing plug biased to a first position to seal the container and moveable to a second open position in a plane parallel to the first position, the plug being inwardly spaced from the flange to form a gap there between, a plurality of flexible spoke-like webs extending across the gap and attached at opposite ends to the plug and flange, the overall length of each of the webs being at least equal to the maximum distance between respective attachments as the plug moves between the first and second positions, the webs resiliently urging the plug from the second position to the first position.

4,799,599

SPECIMEN CUP AND CAP ASSEMBLY FOR CLINICAL ANALYZER

Raymond J. Herrmann, Westlake, Ohio, assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jul. 30, 1982, Ser. No. 404,477
Int. Cl.[4] B65D *51/16*
U.S. Cl. 215—307 **18 Claims**

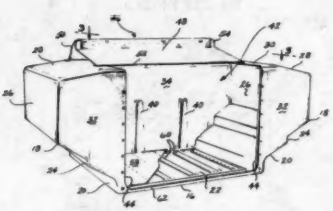
1. A specimen cup and cap assembly for a clinical analyzer apparatus comprising a strip-like cap formed as an arcuate strip segment, in plan, having a plurality of generally vertically extended spaced openings therethrough spaced lengthwise of said strip segment and in generally evenly spaced relation between the sides thereof, a plurality of separate specimen cups, and means on said cap and on each said cups for releasably attaching said cups to said cap as an assembly, whereby each of said openings provide access to the interior of a respective one said cups from exteriorly of said cap, said openings being adapted to provide access for an automatic probe of an associated clinical analyzer apparatus.

4,799,600

BAGGAGE AND CARGO CONTAINER

Erwin T. Gunn, Seattle; John M. Bigler, Redmond, and Patrick J. Hamill, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 20, 1987, Ser. No. 39,701
Int. Cl.[4] B65D *87/14*
U.S. Cl. 220—1.5 **22 Claims**



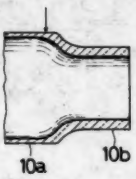
1. In a baggage and cargo container for storing baggage and cargo, the container having a bottom, a plurality of rigid sidewalls, and a top, the improvement comprising a region of said plurality of rigid sidewalls that horizontally circumscribes the container being weaker than the remainder of said sidewalls and, thus, collapsible while the remainder of said sidewalls are not collapsible when the container is subjected to a predetermined vertical compressive load.

4,799,601

TRANSLUCENT ALUMINA CERAMIC TUBE AND A PROCESS FOR MAKING SAME

Shunzo Shimai; Yoshio Saito; Yawara Ando, and Takashi Koseki, all of Togane, Japan, assignors to Toshiba Ceramics Co., Ltd., Japan

Filed Apr. 11, 1983, Ser. No. 483,697
Claims priority, application Japan, Apr. 26, 1982, 57-68665
Int. Cl.[4] C04B *35/64*
U.S. Cl. 220—21 R **6 Claims**



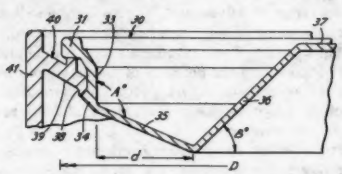
1. A lamp tube comprising: an elongated, tubular monolithic body of translucent alumina ceramic, said elongated tubular body having a central portion and end portions of diameter smaller than said central portion, said tube being produced by drain casting and having substantially the same wall thickness over its entire length.

4,799,602

PLUG LID FOR A CONTAINER

Malcolm G. Collins, Oxon, and Adrien P. Rayner, Wiltshire, both of England, assignors to Metal Box p.l.c., United Kingdom

Filed Mar. 30, 1988, Ser. No. 175,439
Claims priority, application United Kingdom, Apr. 8, 1987, 8708428
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 **9 Claims**



1. A plug lid for fitting in an aperture in a container, said plug lid comprising a peripheral flange, a plug wall extending from the inner periphery of the flange, a retaining bead protruding laterally from the plug wall at a distance from the flange, an annular portion extending inwardly from the plug wall, a frustoconical portion extending axially and inwardly from the annular portion to support a central panel in or near the plane of the peripheral flange, characterised in that, the annular portion joins the inside of the plug wall adjacent the retaining bead and extends inwardly and axially at an obtuse angle to the plug wall in the range 95° to 120° to join directly to the periphery of the frustoconical portion.

4,799,603

CONTAINER AND PLUG CLOSURE MEANS

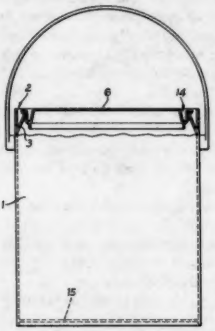
Henryk Dudzik, Mansfield, United Kingdom, assignor to Mardon Illingworth Limited, Nottinghamshire, United Kingdom

Filed Nov. 23, 1987, Ser. No. 123,778

Claims priority, application United Kingdom, Nov. 28, 1986, 8628468

Int. Cl.[4] B65D *39/00*

U.S. Cl. 220—307 11 Claims



1. An injection molded container having a base, a side wall, an annular skirt within the side wall and defining the container mouth, the skirt being adapted to receive as a plug-fit a lid for the container, a lid received by the skirt in a plug-fit manner, a peripheral flange extending inwardly from the side wall and joined at one end to said side wall and its approximate end to said skirt, with the skirt being a continuation of the flange towards the mouth of the container, the flange extending from the side wall to the skirt in a direction towards the mouth at an oblique angle to the side wall as viewed in cross-section, said skirt having a radially extending convex, annular portion adapted to engage a complementary curved portion of the container lid.

4,799,604

VANITY CASE

Sumio Okojima, Inba, and Yukitomo Yuhara, Abiko, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1987, Ser. No. 81,733

Int. Cl.[4] A45D *40/00;* B65D *45/00*

U.S. Cl. 220—260 15 Claims

1. A vanity case comprising:

a box-like receptacle member;

a cover member hinged at the rear end thereof with said receptacle member;

a first latch member;

a second latch member formed on said cover member and adapted to engage with said first latch member whereby said cover member is maintained in a closed position with respect to said receptacle member; and

unlatch means movably secured in said receptacle member and including a pull member having an end portion extending beyond the wall of said receptacle member, and said unlatch means also including means for, upon movement thereof by drawing said pull member, releasing engagement between said first and second latch members.

4,799,605

MAGAZINE ASSEMBLY FOR LABELS OR THE LIKE IN A LABELING MACHINE

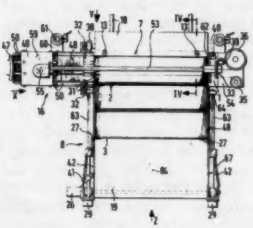
Hermann Kronseder, Regensburger Strasse 42, D-8404 Wörth/Donau, Fed. Rep. of Germany

Continuation of Ser. No. 824,648, Jan. 31, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 97,323

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1985, 3503621; Jul. 13, 1985, 3525035; Oct. 11, 1985, 3536294

Int. Cl.[4] B65H *1/30*

U.S. Cl. 221—11 40 Claims

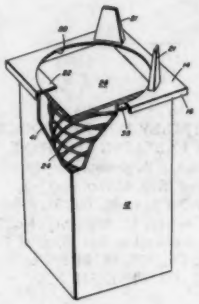


1. A magazine assembly for supplying labels to a labeling machine comprising a main magazine for holding a supply of labels in a stack, first feed means for feeding the labels from the main magazine to a take-out location, a support connected to the main magazine for holding a supply magazine containing a stack of labels in alignment with said main magazine, second feed means for feeding the labels from an aligned supply magazine on the support to the main magazine, said support having an entry opening along one longitudinal side thereof for receiving full replaceable supply magazines and an exit opening for discharging empty supply magazines, a supply magazine feed device disposed adjacent said entry opening for supplying full replaceable supply magazines to said support, said feed device including a slideway extending laterally outwardly from the opening side of the support in a direction transverse to the label feed direction and the longitudinal side of the support, said slideway adapted to hold a plurlaity of full supply magazines in side-by-side and contacting relationship with one another, means for continuously feeding said full supply magazines while in said relationship along the slideway toward and onto said support in a direction transverse to the label feed direction, said magazine feeding means comprising a pair of pusher arms slideably mounted on either side of the slideway for displacement in the direction of movement of said magazines along the slideway and pivotally mounted between a position where each arm engages an end of the outermost supply magazine and a retracted position and drive means for moving said pusher arms toward and away from said entry opening, means for ejecting empty supply magazines from said support and stop means located on the longitudinal side of the support opposite from said opening side to arrest and align a full supply magazine on the support with the main magazine.

4,799,606
DISH DISPENSING DEVICE

Daniel R. Vershbow, West Newton, Mass., assignor to Servolift-/Eastern Corporation, Boston, Mass.

Filed Aug. 3, 1987, Ser. No. 80,975
Int. Cl.[4] A47F *1/04*
U.S. Cl. 221—280 4 Claims

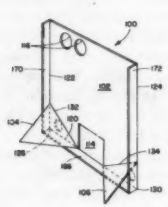


1. In a dispenser of individual ones of a stack of generally horizontally disposed articles, the combination of means for continuously biasing said stack of articles in a vertically upward direction toward an opening, stop means comprising a strip of flexible plastic material disposed atop said dispenser and having a surface overlying a portion of said opening and in contact with a selected first rim portion of the topmost one of said articles and normally maintaining similar selected first rim portions of said articles in close contact one with another, second rim portions of said articles opposite said selected first rim portions being urged apart by said biasing means, and means for mounting said strip of flexible material for relatively large downward deflection and relatively small upward deflection.

4,799,607
BULKHEAD AND LINING SYSTEMS FOR CARGO CONTAINERS

Victor T. Podd, 255 Beverly Avenue, Montreal, Quebec, Canada

Filed Oct. 16, 1986, Ser. No. 920,030
Int. Cl.[4] B65D *35/22;* B67D *3/00*
U.S. Cl. 222—94 9 Claims

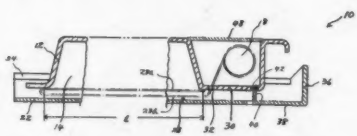


1. A moveable bulkhead comprising:
a rectangular, generally vertical and moveable wall member including
(i) a lower portion,
(ii) an outlet opening in the lower portion to conduct a cargo through the bulkhead, and
(iii) a bottom edge and first and second side edges, the bottom and first side edges forming a first lower corner, and the bottom and second side edges forming a second lower corner;
a first corner member connected to the wall member adjacent to the first lower corner for movement between a closed position wherein the first corner member is adjacent the wall member, and an open position wherein the first corner member slants outwardly downwardly away from the wall member and laterally downwardly from the first side edge and toward the outlet opening to guide the cargo downward thereto; and
a second corner member connected to the wall member adjacent to the second lower corner for movement between a closed position wherein the second corner member is closely adjacent and substantially parallel to the wall member, and an open position wherein the second corner member slants outwardly downwardly away from the wall member and laterally downwardly toward the outlet opening to guide the cargo downward toward the outlet opening; and wherein:
the wall member includes front and back sides;
the first corner member is connected to the front side of the wall member for pivotal movement about a first connecting line, between the open and closed positions of the first corner member;
the second corner member is connected to the front side of the wall member for pivotal movement about a second connecting line between the open and closed positions of the second corner member; and
the bulkhead further comprises
(i) first pulling means connected to the first corner member to pull the first corner member from its closed position to its open position,
(ii) second pulling means connected to the second corner member to pull the second corner member from its closed position to its open position,
(iii) a first access opening located between the first lower corner and the first connecting line to provide access to the first pulling means from the back side of the wall member,
(iv) a second access opening located between the second lower corner and the second connecting line to provide access to the second pulling means from the back side of the wall member,
(v) means to further connect the first corner member to the wall member to releasably hold the first corner member in its open position, and
(vi) means to further connect the second corner member to the wall member to releasably hold the second corner member in its open position.

4,799,608
TONER CARTRIDGE

Seiji Oka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,164
Claims priority, application Japan, Sep. 18, 1986, 61-143611[U]
Int. Cl.[4] B65D *25/38*
U.S. Cl. 222—505 12 Claims



1. A toner cartridge comprising:
a container storing toner therein and having an opening formed therethrough;
a seal member having a first portion which is stuck to said container to close said opening, and a second portion turned up to extend along and below said first portion;
a take-up means provided in said container for taking up said second portion of said seal member to thereby sequentially

tear off said first portion of said seal member, thereby discharging the toner from said container;

a protective cover mounted on said container to be slidable along the opening of said container for protecting said seal member; and

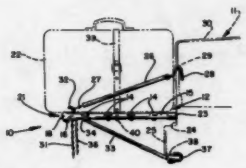
a drive means separate from said take-up means for driving said take-up means in accordance with a sliding movement of said protective cover by an amount sufficient to allow said seal member to be fully removed from said opening of the container.

4,799,609

PORTABLE LUGGAGE CARRIER FOR AUTOMOBILES

Antonio J. Castilla, 3343 Lanarc, Plano, Tex. 75023

Filed Jan. 4, 1988, Ser. No. 141,405
Int. Cl.[4] B60R *9/06*
U.S. Cl. 224—42.07 **10 Claims**



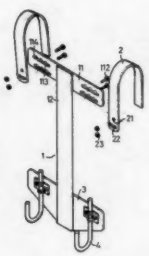
1. A luggage carrier for automobiles that fastens to the car trunk rear rim and the car rear bumper comprising: a generally coplanar carrier platform including a "U" shaped tubular assembly along with a plurality of cross tubes extended between and fastened to opposite side legs of the "U" shaped tubular assembly; resilient bumper pads mounted on front ends of the opposite side legs of the "U" shaped tubular assembly; a plurality of chain elements having forward end hooks that hook over a car trunk rear end rim and hook means connecting chain outer end sections to the rear tubular element of said "U" shaped tubular assembly; and an additional chain length having a front hook connectable to the bottom of said car rear bumper and a rear hook for connection to said rear tubular element of said "U" shaped tubular metal assembly.

4,799,610

CARRYING HOLDER

Wu H. Hsieh, No. 178, Chun-shan Second Road, Lu Chou Hsiang, Taipei Hsien, Taiwan

Filed Mar. 14, 1988, Ser. No. 167,579
Int. Cl.[4] G10G *5/00*
U.S. Cl. 224—266 **2 Claims**



1. A carrying holder of a musical instrument comprising a "T" bar (1) having an elongated central plate section attached perpendicularly to the first end of said central plate section, a pair of shoulder bars having a lower fastening end and an upper hook shaped portion (2), a belly plate (3) attached perpendicularly to the opposite end of said central plate section and fastening means on said belly plate for holding said musical instrument (4), characterized in that:

said pair of shoulder bars (2) comprising elongated rigid members each adapted to the positioned over a shoulder of the wearer each has a hole and an arc-like slot (22) aligned from an upper position to a lower position on said fastening end thereof; and

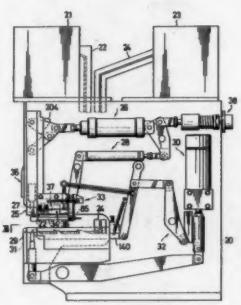
said "T" bar (1) has two longitudinally extending and parallel aligned slots aligned grooves (113) on each end thereof said slots further including an appropriate number of semi-circular holes (114) adjacent to an intersecting one side of each of said slots, said hole and arc-like slot in each respective shoulder bar being in alignment with said slots in each respective end of said center plate, bolt means slidable through each respective aligned holes and slots in said shoulder bars and lateral plate adjustably fastening said pair of shoulder bars (2) to said lateral plate (11) by bolting said bolts on a desired one of said semi-circular holes (114) and pivot said shoulder bars about said holes and arc-like slots.

4,799,611

APPARATUS FOR ASSEMBLING PAIRS OF GARMENT FASTENER ELEMENTS

Yukio Taga, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 5, 1987, Ser. No. 81,734
Claims priority, application Japan, Aug. 6, 1986, 61-184870
Int. Cl.[4] A41H *37/10*
U.S. Cl. 227—18 **17 Claims**



1. An apparatus for assembling a pair of fastener elements of a garment fastener with a garment fabric disposed between the two fastener elements, comprising:

(a) a frame;

(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said upper unit having a punch, said lower unit having a die, said punch and said die being reciprocally movable toward and away from each other to join the two fastener elements together with the garment fabric sandwiched therebetween;

(c) a first drive mechanism for reciprocating said punch, said first drive mechanism including a fluid-pressure actuator having a piston rod and a cylinder tube;

(d) a first pusher mechanism including first means supported by said frame and defining a first feed passage receptive of one fastener element, said first pusher mechanism also including a first pusher reciprocable within said first feed passage to push the one fastener element therethrough to said upper unit;

(e) a second drive mechanism for reciprocating said die;

(f) a second pusher mechanism including second means supported by said frame and defining a second feed pas-

sage receptive of the other fastener element, said second pusher mechanism also including a second pusher reciprocable within said second feed passage to push the other fastener element therethrough to said lower unit; and

(g) a combined supporting and connecting mechanism for slidably and pivotably supporting said fluid-pressure actuator on said frame and also for operatively connecting said fluid-pressure actuator and said first pusher mechanism, said combined mechanism including a pivot lever rotatably mounted on said frame and pivotably connected at opposite ends with said cylinder tube and said first pusher mechanism, and a spring-biased slide rod slidably mounted on said frame and pivotably connected at its one end to said pivot lever adjacent to said cylinder tube, said slide rod being normally urged in a direction such that during a portion of the movement of said piston rod from said cylinder tube adjacent the fully retracted position of said piston rod, said pivot lever operates said first pusher mechanism to retract and advance said first pusher.

4,799,612

FOOT-OPERATED PRESS

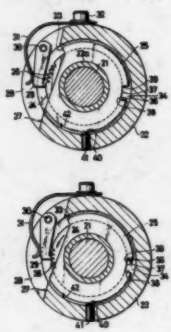
Yoshiyuki Tolshi, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 24, 1987, Ser. No. 88,408

Claims priority, application Japan, Aug. 27, 1986, 61-13084[U]

Int. Cl.[4] B21J *15/16, 15/28*

U.S. Cl. 227—121 **9 Claims**



1. A foot-operated press comprising:

(a) a frame having a horizontal shaft fixedly secured thereto;

(b) a foot pedal pivotably supported on said frame and angularly movable between an uppermost standby position and a lowermost clinching position, said foot pedal being normally urged toward said standby position;

(c) a punch vertically reciprocably supported on said frame; and

(d) a ratchet mechanism mounted on said shaft and operatively interconnecting said foot pedal and said punch, said ratchet mechanism including

(i) a housing secured to said shaft,

(ii) a ratchet wheel rotatably mounted on said shaft and connected to said foot pedal for movement in unison with said foot pedal, said ratchet wheel having a series of external ratchet teeth disposed in said housing and a pin extending parallel to the axis of said shaft,

(iii) a pawl pivotably mounted on said housing and normally urged toward said ratchet wheel, said pawl being lockingly engageable with said ratchet teeth to prevent backward movement of said ratchet wheel and hence said foot pedal connected thereto, and

(iv) a cam disc rotatably disposed in said housing and having a recessed portion loosely receiving said pin and engageable with said pin to turn said cam disc together with said ratchet wheel, and further having a cam surface engageable with said pawl to urge the latter away from said ratchet teeth.

4,799,613

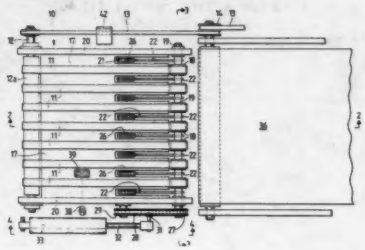
METHOD AND APPARATUS FOR SENSING THE PREFERRED SIDE OF GARMENT PORTIONS

Fletcher D. Adamson, Alexander City, Ala., assignor to Russell Corporation, Alexander City, Ala.

Filed Nov. 9, 1987, Ser. No. 118,557

Int. Cl.[4] A41H *43/02*

U.S. Cl. 223—39 **20 Claims**



1. Apparatus for processing fabric garment portions having a preferred side and a non-preferred side selected in accordance with the weave of the fabric comprising:

(a) first means for detecting whether said preferred side is face up or face down;

(b) second means for detecting the leading and trailing edge of said garment at a predetermined point as it moves along a conveyor;

(c) means for selectively inverting a garment as it is discharged from said conveyor; and

(d) control means responsive at selected time intervals to said first and second detecting means for controlling said inverting means.

4,799,614

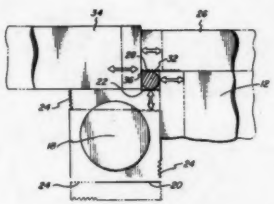
APPARATUS FOR ULTRASONIC WELDING OF WIRES

Curtis Welter, West Haven; Guillermo Coto, Monroe, and Michael Patrikios, Stratford, all of Conn., assignors to American Technology, Inc., Milford, Conn.

Filed Apr. 9, 1987, Ser. No. 36,477

Int. Cl.[4] B23K *1/06*

U.S. Cl. 228—1.1 **13 Claims**



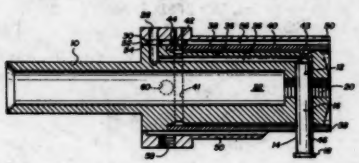
1. An ultrasonic welding tip adapted to be connected to an ultrasonic horn to weld wire ends together comprising several alternative worksurfaces about the periphery of the tip successively available by rotation for contact with the wire ends to be welded, said tip having the cross sectional shape of a convex polygon substantially free of concave surfaces and said worksurfaces being found at the corners of said convex polygon.

4,799,615

COLLET HOLDER

Michael L. Davenport, Rte. 6, Box 907, Leander, Tex. 78641

Filed Jun. 17, 1987, Ser. No. 63,064
Int. Cl.[4] B23K 37/04
U.S. Cl. 228—44.7 7 Claims



1. A collet holder comprising:

a first cylindrical section which holds a cartridge heater and collet and provides a vacuum to the collet;

a second section concentrically surrounding and attached to the first cylindrical section to form a turbulent flow heat exchanger for providing a heated gas to the collet; and including a discharge orifice through which the collet extends, thereby heating the collet and minimizing entrainment of atmospheric gases; and

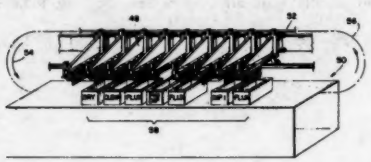
a third section concentrically surrounding the second section and attached to the rear portion of the first cylindrical section, thereby providing a heat shield to prevent radiant heat losses.

4,799,616

SOLDER LEVELING METHOD AND APPARATUS

John P. Simpson, Apalachin, N.Y.; Gary L. Newman, Little Meadows, Pa.; James M. Larnerd, Port Crane, N.Y., and Alan J. Emerick, Warren Center, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 873,318, Aug. 11, 1986, abandoned.
This application Oct. 6, 1987, Ser. No. 107,852
Int. Cl.[4] B23K 37/04; H05K 3/34
U.S. Cl. 228—125 13 Claims



1. A method of leveling solder on a circuitized substrate to produce substantially flush solder fill over pins recessed in the substrate comprising the steps of:

providing a rack supporting at least one circuitized substrate having mounting pins extending therethrough from recessed terminal regions of said substrate;

moving the rack from an inactive position distant from a vessel of molten solder to an active position at which the substrate is immersed in the molten solder;

agitating the substrate while it is in the active position by causing it to reciprocate at such an amplitude and frequency as to attain a maximum speed in the range of 10 to 50 inches per second;

return the rack to the inactive position;

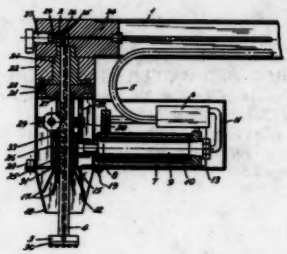
pivoting the rack to a pre-strike position raised above an impact anvil; and releasing the rack and thereby allowing it to swing downwardly and strike the anvil thereby dislodging excess solder from the substrate.

4,799,617

CONVECTION HEAT ATTACHMENT AND REMOVAL INSTRUMENT FOR SURFACE MOUNTED ASSEMBLIES

Gennady Friedman, Randallstown, Md., assignor to Advanced Techniques Co., Inc., Huntingdon Valley, Pa.

Filed Oct. 9, 1987, Ser. No. 106,487
Int. Cl.[4] B23K 3/04
U.S. Cl. 228—180.2 15 Claims



1. A method of positioning a surface mounted electronic component in a soldering position and for soldering metallic solder contacts on this component to corresponding solder contacts on a printed circuit board by means of hot gas applied to said solder contacts in a form of flow directed so as to pass by said contacts and distributed evenly along each perimeter side of said component, this method being the following sequence of operations:

attaching said component to a suction cup which has, in the plane of its bottom surface, the same rectangular shape and size as said component and is centrally located with respect to said flow so that said suction cup covers the whole top surface of said component;

moving said suction cup with the attached to it component until said solder contacts on the component touch the corresponding contacts on the printed circuit board on

heating the solder of said solder contacts on said component and said printed circuit board to the liquid state while simultaneously cooling said component by a flow of cool air delivered through said suction cup.

3. An apparatus for positioning a surface mounted electronic component in a soldering position or for soldering solder contacts on this component to corresponding solder contacts on a printed circuit board or for desoldering such contacts and removing said electronic component, where soldering and desoldering is accomplished by heating said contacts with hot gas, said apparatus comprising:

a thermal unit for heating gas passing through it, for delivering said heated gas to said solder contacts so that said heated gas forms a thin layer of turbulent flow directed substantially downward along the inside surfaces of nozzle conduit walls, for distributing said flow around the perimeter of said component;

a component holding extension for holding said component in a fixed position with respect to said flow of hot gas, for achieving desired angular alignment of said component and said flow of hot gas with respect to said printed circuit board and for protecting said component from overheating;

moving means for moving said component holding extension and said thermal unit into any desired vertical as well as horizontal position over said printed circuit board and for holding said component holding extension and said thermal unit in that postiion;

a printed circuit board handling unit for positioning and holding said printed circuit board in a generally horizontal position and for moving said printed circuit board in horizontal plane;

printed circuit board heater means for heating said printed circuit board and

means for creating vacuum or air flow to be delivered to the top surface of said electronic component interchangably to, respectively, hold said component or cool it.

4,799,618

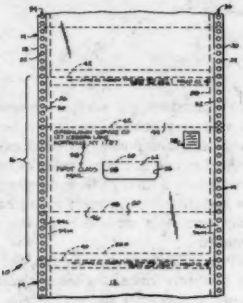
BIFOLDED MAILER WITH INSERT

Richard A. Jenkins, Wheeling, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 25, 1986, Ser. No. 911,412

Int. Cl.[4] B45D *27/04, 27/34*

U.S. Cl. 229—92.3 26 Claims



1. A bifolded mailer with insert, comprising:

a paper sheet having left and right edges, said paper sheet being folded twice in the same direction to provide a middle panel adjoining a head panel and a foot panel along respective transverse fold lines;

said head panel having a top edge which is lapped with a bottom edge of said foot panel intermediate the depth of said middle panel;

means securing said head panel to said foot panel marginally of said top and bottom edges, and means securing said paper sheet to itself, panel to panel marginally of said left and right edges in order to define a substantially completely enclosed pocket;

an insert body, separate from said paper sheet, contained within said enclosed pocket;

left and right end tear strip means defined on said paper sheet and adapted to permit respective left and right edge marginal portions to be severed from said paper sheet along the full depth of said paper sheet; and

transverse tear strip means cooperatingly defined in both said head and foot panels and extending from one to the other of said left and right edge marginal portions, so that after said left and right marginal portions have been severed from said paper sheet and said transverse tear strip means has been torn across said paper sheet, the resulting bifolded remainder of said paper sheet may be opened up for viewing of an inner face thereof and for gaining access to said insert body, said transverse tear strip means comprising two longitudinally spaced transverse perforation lines in said paper sheet including one provided in said head panel adjacent but longitudinally spaced from said top edge of said head panel and another provided in said foot panel adjacent but longitudinally spaced from said bottom edge of said foot panel.

4,799,619

DRINKING FLUIDS CARTON

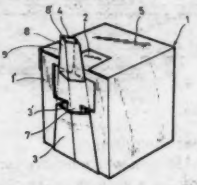
Ki-Seok Lee, 77-19, Yukchon-Dong, Eunpyung-ku, Seoul, Rep. of Korea

Filed May 27, 1987, Ser. No. 54,530

Claims priority, application Rep. of Korea, Mar. 25, 1987, 87-3789[U]

Int. Cl.[4] B65D *5/74*

U.S. Cl. 229—125.42 4 Claims



1. A hexahedral drinking fluids carton comprising:

a tapered outflow opening extending upwardly from a bottom portion of a side wall of the carton; and

an upwardly tapered diamond-shaped bendable guide part with two interior and two exterior contiguous surfaces, having an outflow mouth part at an upper portion of the guide part, said upper portion extending above a top wall of the carton and an access opening at a bottom portion of the guide part, said guide part is formed adjacent to the side wall of the carton with a portion of the interior surfaces fixed to the side wall such that said guide port seals the outflow opening, wherein the access opening communicates with the outflow opening, and wherein the outflow mouth part can be folded flat against the top wall of the carton and sealed by a removable protective covering portion applied above the outflow mouth part.

4,799,620

CORNER CONSTRUCTION OF STACKABLE CARDBOARD BOX

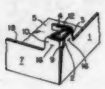
Antonio R. Vilella, Amposta, Spain, assignor to Daniel Aguilo Panisello S.A., Amposta, Spain

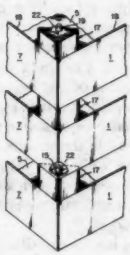
Filed Dec. 4, 1986, Ser. No. 937,985

Claims priority, application Spain, Jan. 29, 1986, 292.019

Int. Cl.[4] B65D *21/02*

U.S. Cl. 229—191 4 Claims





1. A stackable cardboard box construction comprising a sheet of corrugated cardboard grooved and folded to form a

bottom panel, opposite side walls and opposite lengthwise walls united with said bottom panel by grooved fold lines,

each of said side walls having at each end thereof an upwardly protruding tab and a flap separated from an upper edge of said side wall and joined with the respective tab by a grooved fold line for folding inwardly,

each of said lengthwise walls having at each end thereof an upwardly projecting tab of the same height as said tab of an adjoining side wall and first, second and third panels extending the respective tab, said first, second and third panels being joined with the respective tab and with one another by grooved fold lines for folding inwardly,

an end portion of each of said lengthwise walls including the respective tab forming one side of a column of right triangular cross section, said first panel being folded at right angles to said lengthwise wall to form a second side of said column, said second panel being folded at one hundred thirty five degrees to said first panel to form the hypotenuse of said column and said third panel being folded at one hundred thirty-five degrees to said second panel to underlie and reinforce an end portion of said lengthwise wall, an end portion of an adjoining side wall together with the respective tab overlying said first panel on said second side of said column and the respective flap being folded in at one hundred thirty five degrees to said end portion of said side wall to overly said second panel forming the hypotenuse of said column to form at each corner of said box a triangular hollow column having double walls on all sides and projecting up above said side walls and lengthwise walls,

a triangular plastic cap fitting over the upwardly projecting portion of each of said triangular columns, each of said caps having a stop plane engaging the upper end of the respective column, a table spaced above said stop plane, a plurality of reinforcing ribs resting on the upper end of said column and extending between said stop plane and said table and a frustoconical stud projecting up from said table,

said bottom panel having at each corner portion thereof an opening for reception of said studs of an under-disposed like box.

4,799,621

METHOD AND APPARATUS FOR SHIELDING CARGOES FROM CONDENSATE

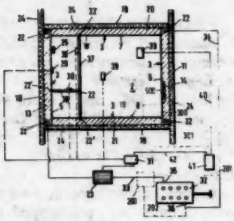
Johann-Stephan Reith, Palmaille 118, D-2000 Hamburg 50, Fed. Rep. of Germany

Continuation of Ser. No. 610,326, May 15, 1984, abandoned. This application Apr. 29, 1987, Ser. No. 45,699

Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317776

Int. Cl.[4] G05D *23/00*

U.S. Cl. 237—2 A **45 Claims**



1. A method of conditioning the cargo area of a shipping conveyance, particularly a watercraft, wherein the cargo area is surrounded by walls which serve to confine cargo, especially bulk cargo, as well as moisture-containing air, comprising the step of maintaining the temperature of confined air as well as the temperature of the walls at a value such as to prevent condensation of moisture on the walls, including externally heating the walls at least in regions where the walls are adjacent the confined cargo so that the cargo area is heated by heat which is transmitted by the walls.

4,799,622

ULTRASONIC ATOMIZING APPARATUS

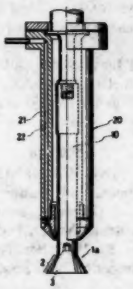
Kiyoe Ishikawa, Oi; Kakuro Kokubo, Atsugi; Hitoshi Kurokawa, Oi; Daijiro Hosogai, Kawashima, and Hirokazu Takenaka, Hachioji, all of Japan, assignors to Tao Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1987, Ser. No. 79,742

Claims priority, application Japan, Aug. 5, 1986, 61-182755; Aug. 8, 1986, 61-185308; Aug. 8, 1986, 61-185309; Aug. 8, 1986, 61-185310; Sep. 3, 1986, 61-207183; Sep. 12, 1986, 61-139408[U]

Int. Cl.[4] B05B *1/26, 3/14*

U.S. Cl. 239—102.2 **29 Claims**



1. An ultrasonic atomizing apparatus including an ultrasonic vibration generating means and an ultrasonic vibrator horn having a cylindrical section connected at one end of said ultrasonic vibration generating means and having a flared portion connected to the other end of the cylindrical section, said flared portion being flared and enlarged in diameter towards the tip end of the horn, said apparatus being adapted to atomized liquid material on said flared portion as the liquid material is supplied from liquid material supply means to the flared portion, characterized in that a hollow recess is formed in said flared portion, said hollow recess opening towards the tip of the horn, the geometry of said hollow recess being such that the cross-sectional area of the flared portion of the horn in any plane perpendicular to the longitudinal axis of the horn is substantially the same as the cross-sectional area of the flared portion in all other planes perpendicular to the longitudinal axis of the horn, the horn also having a single nodal point positioned above a boundary between said cylindrical section and the flared portion when said horn is ultrasonically excited.

4,799,623

VARIABLE CONVERGENT/DIVERGENT NOZZLE

Raymond J. Bruchez, Jr., Lake Park; Gunther Eichhorn, Palm Beach Gardens, and Elliott C. Kiblinger, II, North Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 4, 1987, Ser. No. 116,930

Int. Cl.[4] F02K *1/08*

U.S. Cl. 239—265.41 **9 Claims**

1. A variable area convergent divergent nozzle arrangement for a supersonic aircraft having a subsonic cruise condition and a supersonic flight condition comprising:

engine fixed structure;

a plurality of convergent flap supports fixed to said engine structure;

a plurality of upstream convergent flaps circumferentially

disposed around the axis of said engine, each pivotally mounted on said convergent flap support;

positioning means for positioning said convergent flaps to a selected throat area condition;

a plurality of downstream divergent flaps circumferentially disposed around the axis of said engine, the upstream edge of said divergent flaps pivotally connected to the downstream edge of said convergent flaps;

a divergent flap strut pivotally connected to each flap and pivotally connected to said engine fixed structure;

a lost motion connector associated with said strut and located between said divergent flap and said engine fixed structure; and

a biasing means for biasing lost motion connection toward one end of said lost motion connection in a direction to decrease the divergence of said divergent flaps.

4,799,624

SPRAY HEAD HAVING FLUID METERING SCREWS

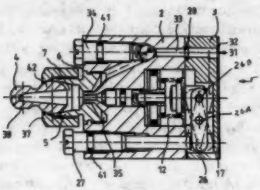
Roland Fink, Winterbach, and Walter Klingenstein, Urbach, both of Fed. Rep. of Germany, assignors to Oskar Frech GmbH & Co., Schorndorf-Weiler, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,934

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644184

Int. Cl.[4] B05B 7/12

U.S. Cl. 239—412 **12 Claims**



1. A spray head for spraying a spray medium onto molds and dies, comprising:

a nozzle body including:

a front side,

a rear side, and

first and second internal passage means for conducting spray medium and compressed air, respectively, and including first and second fluid inlet ports in said rear side to which spray medium and compressed air are supplied,

a spray nozzle mounted on said front side for emitting a mixture of spray medium and compressed air received from said first and second passage means,

first metering means for controlling the volume of spray medium supplied to said nozzle and including

a spray control valve,

a reciprocable piston operably connected to said valve for opening and closing said valve,

a stop reciprocable toward and away from said piston for adjusting the stroke length thereof,

a first metering screw disposed in said body and exposed for adjustment at said front side, and

actuating means for displacing said stop in response to rotation of said first metering screw, said actuating means arranged such that one end thereof acts against said stop and an opposite end thereof is engaged by said first metering screw, and

second metering means for controlling the volume of compressed air supplied to said nozzle and including a second metering screw disposed in said body and exposed for adjustment at said front side.

4,799,625

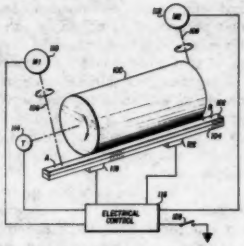
METHOD AND APPARATUS FOR ADJUSTING A SHEAR BAR RELATIVE TO A CUTTER HEAD

Marvin G. Weaver, Jr., Lititz; Carl E. Bohman, New Holland; Richard P. Strosser, Akron; John R. McClure, New Holland, and Mark K. Chow, Leola, all of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed May 5, 1987, Ser. No. 46,011

Int. Cl.[4] B02C 25/00

U.S. Cl. 241—30 **12 Claims**



1. In a cutting apparatus having an adjustably fixed shear bar cooperating with a rotating cutter head to cut material passing between the bar and head, the improvement comprising:

first and second bidirectional motors;

first means responsive to said first motor for moving a first end of said shear bar relative to said cutter head;

second means responsive to said second motor for moving a second end of said shear bar relative to said cutter head;

sensing means for sensing contact between said shear bar and said cutter head;

start control means; and,

electrical control means responsive to said start control means and said sensing means for controlling said first and second motors to adjust the position of said shear bar,

said electrical control means including means for alternately energizing one of said motors and then the other whereby one end and then the other end of said shear bar is moved until said shear bar is adjusted relative to said cutter head.

4,799,626

KITCHEN APPARATUS FOR PREPARING FOOD

Sigrun Hickel, Waldems, and Wolfgang Franke, Langen, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 107,951

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637169

Int. Cl.[4] A47J 43/046

U.S. Cl. 241—37.5 **18 Claims**

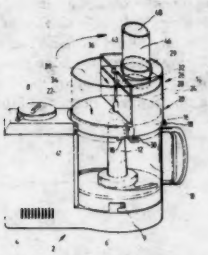
1. Feed apparatus for a kitchen apparatus for preparing food, said kitchen apparatus including open-topped vessel structure in which a food processing tool is adapted to be disposed for rotation about an axis,

said feed apparatus including lid structure adapted to engage the open top of said vessel,

a cover structure that has a receiving opening, and

a food receiving receptacle mounted on axle structure carried by said cover structure and extending substantially parallel to the axis of rotation of the processing tool in said

vessel, said axle structure being located in approximately the same plane as the receiving opening of said cover structure,



said receptacle being adapted to be swiveled about said axle structure between a first position outside of said cover structure and a second position in said cover structure.

4,799,627

MINERAL SIZERS

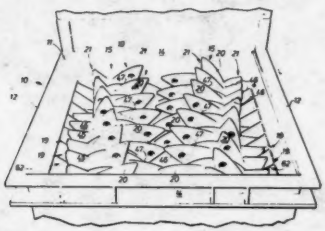
Alan Potts, Nottingham, Isle of Man, assignor to MMD Design and Consultancy Limited, Somercotes, England

Continuation of Ser. No. 824,301, Jan. 30, 1986, abandoned, which is a continuation of Ser. No. 532,821, filed as PCT GB82/00354 on Dec. 17, 1982, published as WO83/0287 on Jun. 23, 1983, abandoned. This application Jan. 16, 1987, Ser. No. 8,053

Claims priority, application United Kingdom, Dec. 19, 1981, 8138347

Int. Cl.[4] B02C *13/20*

U.S. Cl. 241—236 **12 Claims**



1. In a mineral breaker having at least a first breaker drum including a plurality of breaker teeth projecting radially from the drum and further including a plurality of opposed breaker teeth positioned so that on rotation of the drum mineral lumps to be broken are gripped between the leading face of the teeth of the drum and a pair of said opposed breaker teeth to thereby break the mineral lump gripped therebetween by a snapping action, the improvement of the breaker teeth mounted on the breaker drum each comprising a main tooth body in the form of a projection projecting from the drum and a sheath removably mounted on the tooth body, the sheath including a hollow tooth formation which defines the external shape of the tooth and which includes a pocket which is seated on and fully envelopes the tooth body, the shape of the tooth body and the pocket being complementary so that when the sheath is seated on the tooth body the leading and trailing faces of the tooth body and the respective facing internal walls of the pocket are in face contact with one another so that loadings applied to the tooth during said snapping action are transmitted through the sheath and onto the main tooth body.

4,799,628

LEVEL WINDER FOR DOUBLE-BEARING FISHING REEL

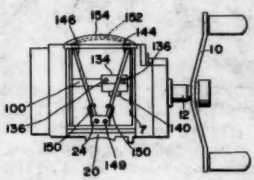
Masaru Watanabe, and Ichiro Tabei, both of Ashikaga, Japan, assignors to Copal Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1987, Ser. No. 62,830

Claims priority, application Japan, Jun. 23, 1986, 61-146637; Jun. 23, 1986, 61-146638

Int. Cl.[4] A01K *89/04*

U.S. Cl. 242—84.42 **4 Claims**



1. A double-bearing fishing reel comprising:

a casing;

a handle shaft rotatably attached to said casing;

a handle for rotating said handle shaft attached thereto;

a drive gear means mounted on said handle shaft;

a spool shaft rotatably and axially slidably mounted on said casing;

a spool and a spool gear means mounted on said spool shaft and meshable with said drive gear means;

an operating lever means attached to said casing for engaging said spool gear means with said drive gear means for causing said spool to be driven by rotation of said handle and for disengaging said spool gear means from said drive gear means for causing said spool to be freely rotatable on said spool shaft;

a traverse cam shaft rotatably and axially slidably mounted on said casing;

a traverse cam and a traverse cam gear means mounted on said traverse cam shaft, said traverse cam gear means being meshable with said drive gear means;

a traverse cam guide cylinder mounted on said traverse cam;

a level winder including a level winder guide means mounted on and rotatable with said traverse cam guide cylinder, said level winder guide means being laterally reciprocal along said traverse cam cylinder, said level winder guide means having an integral slant arm, a line guide arm holder on said slant arm, and a pair of retractable pins reciprocally held in said line guide arm holder;

a pair of line guide arms, each said line guide arm having first and second ends, each said first end being rotatably attached to said casing, and each said second end being engageable by said pair of retractable pins for holding said pair of line guide arms in parallel when said level winder guide means is reciprocated along said traverse cam cylinder;

biasing means for biasing said pair of line guide arms apart to form a substantially V-shape when said pair of line guide arms are not held in parallel by said pair of said retractable pins; and

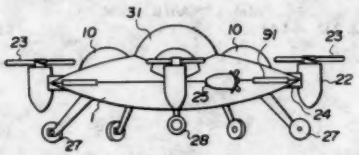
means for engaging and disengaging said traverse cam gear means with said traverse cam for reciprocally moving said level winder guide means along said traverse cam cylinder when said cam gear means meshes with said drive gear mean for rotation by said handle.

4,799,629

FLYING OBJECT FOR COLLECTING SOLAR RAYS

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 10, 1987, Ser. No. 119,364
Claims priority, application Japan, Dec. 8, 1986, 61-292148
Int. Cl.[4] B64B *1/24*
U.S. Cl. 244—23 C 2 Claims



1. A flying object for collecting solar rays and for treatment of personnel in said flying object with said collected solar rays comprising a generally disk-shaped flying body having an interior compartment, said flying body having an outer circumference, propelling means mounted on said body and extending outwardly of said outer circumference, said propelling means being operable to propel said flying object in a desired direction of flight and to maintain said flying object in a fixed airborne position, float means mounted on said body and operable to be deployed to impart a lifting force to said flying object, and solar ray collecting means mounted on said body for collecting solar rays and directing said collected solar rays into said compartment for effecting medical treatment of personnel within said compartment, whereby said flying object is operable to provide said medical treatment by being deployed airborne to an altitude above weather conditions which block solar rays to the earth's surface.

4,799,630

LANDING ATTACHMENT TO AIRCRAFT FOR AMPHIBIOUS LANDING

Edward Richards, 616 N. Beachwood Dr., Los Angeles, Calif. 90004

Continuation-in-part of Ser. No. 857,297, Apr. 28, 1986, abandoned. This application Jan. 12, 1988, Ser. No. 143,012
Int. Cl.[4] B64C *25/66*
U.S. Cl. 244—101 5 Claims

1. A landing attachment to aircraft for amphibious landing comprising a pair of spaced apart landing members located on opposite sides of the underbelly of an aircraft, each landing member comprising:

a. an elongated internal fairing member including a horizontal surface and a pair of sidewalls;

b. said horizontal surface of said elongated internal fairing member further comprising a multiplicity of openings spaced apart from each other;

c. a multiplicity of fairing and strut attachment members located along the length of said horizontal surface of said internal fairing and aligned with a respective one of the openings in said horizontal surface;

d. each fairing and strut attachment member receiving and supporting a wheel strut through a respective one opening in the horizontal surface of said internal fairing, with each wheel strut extending transversely within the elongated internal fairing for a portion of the height of the internal fairing sidewalls;

e. each wheel strut affixed to a yoke which in turn supports and carries a landing wheel;

f. an outer fairing enveloping said internal fairing and multiplicity of fairing and strut attachment members;

g. each landing wheel protruding below the lowermost tip of the internal fairing sidewalls and outer fairing for a portion of the landing wheel diameter; and

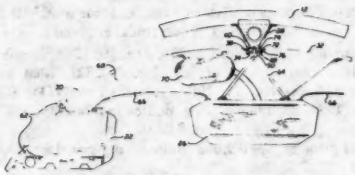
h. said outer fairing and enclosed internal fairing and multiplicity of fairing and strut attachment members attached to and along the length of one side of the underbelly of an aircraft.

4,799,631

AIRCRAFT SHELL MODULE

David R. Humphries, Clearwater; Donald C. Fetterhoff, St. Petersburg, and William R. Higgins, Clearwater, all of Fla., assignors to ATR International, Inc., Clearwater, Fla.

Filed Feb. 18, 1987, Ser. No. 15,839
Int. Cl.[4] B64C *1/14*
U.S. Cl. 244—118.5 16 Claims



1. A module for the interior of an aircraft fuselage containing a fuselage deck, the module comprising:

(a) contiguous pairs of arcuate port and starboard panels having a first and a second end;

(b) the first end of each panel mounted in multiple isolaters located within separate overhead support channels;

(c) multiple support brackets attached to a port and starboard side of the fuselage deck;

(d) an adjustable port support channel attached to the support brackets on the port side of the fuselage deck;

(e) an adjustable starboard support channel attached to the support brackets on the starboard side of the fuselage deck;

(f) multiple isolators mounted in the port and starboard channels for receiving and holding the second end of each arcuate panel; and

(g) the overhead support channels supported by an assembly attached to an overhead portion of the fuselage, the arcuate panels thereby being spaced apart from the fuselage of the aircraft.

4,799,632

SEAT FOR A VEHICLE, ESPECIALLY AN AIRCRAFT SEAT

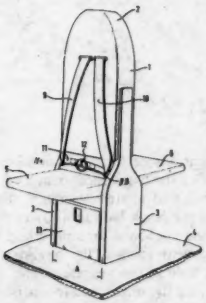
Faruk Baymak, Hamburg, and Helmut Stueben, Gruenendeich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 105,392

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1986, 3634839

Int. Cl.[4] B64D *11/06*

U.S. Cl. 244—122 R 10 Claims



1. A vehicle seat, especially for an aircraft, comprising two uprights and rigid crossbar means interconnecting said two uprights to form a frame structure, double backrest means connected to said frame structure, first backrest cushion means on one side of said double backrest means, second backrest cushion means on the other side of said double backrest means, first seat means and first hinge means securing said first seat means to said vehicle seat for cooperation with said first backrest cushion means, second seat means and second hinge means securing said second seat means to said vehicle seat for cooperation with said second backrest cushion means, safety belt means secured to both sides of said vehicle seat to permit the use of the seat by two persons simultaneously facing in opposite directions, said vehicle seat further comprising first and second bracket means for mounting each of said first and second seat means to said frame structure, slide means slidably mounting said first and second seat means to said bracket means, said first and second hinge means connecting said first and second bracket means to a respective point of said frame structure, and further hinge means connecting said backrest means to said seat means and to said frame structure.

4,799,633

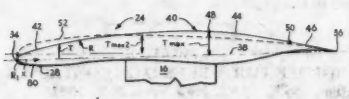
LAMINAR FLOW NECELLE

Daniel J. Lahti, and James L. Younghans, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 437,581, Oct. 29, 1982, abandoned. This application Jul. 27, 1987, Ser. No. 77,963

Int. Cl.[4] B64D *29/00*

U.S. Cl. 244—130 25 Claims



1. A nacelle for use on an aircraft comprising:

an annular leading edge and an annular trailing edge having a reference chord of length C extending from said leading edge to said trailing edge and;

an outer annular surface continuous from said leading edge to said trailing edge and including a forward portion, an intermediate portion and an aft portion, said outer surface being devoid of aerodynamic drag reducing holes, slots and active devices;

said outer surface having a profile defined by a relative thickness measured perpendicularly from said chord to said outer surface, said thickness increasing along said chord from said leading edge to a position of a maximum thickness at a first intersection joining said forward portion and said intermediate portion, said position of maximum thickness located greater than about 36% C, said thickness decreasing along said chord from said position of maximum thickness to a second intersection joining said intermediate portion and said aft portion and further decreasing from said second intersection to said trailing edge; and

said profile of said outer surface being effective for producing laminar flow along said forward portion and a pressure due to airflow thereover which decreases continuously at a negative gradient from said leading edge to said position of maximum thickness, and being effective for producing turbulent flow along said intermediate portion and said aft portion and a pressure due to airflow thereover which increases continuously at a positive gradient from said position of maximum thickness to said trailing edge.

4,799,634

HOOK FOR RELEASING PARACHUTE OR THE LIKE FROM A KITE

Nelson K. Beaulieu, 152, chemin de l'Aéroport, Thetford Mines, Quebec, Canada G6G 5R7

Filed May 13, 1987, Ser. No. 49,215

Int. Cl.[4] A63H *27/08*

U.S. Cl. 244—155 R 2 Claims

1. A releasing hook member adapted to be fixed at the lower end of a kite frame, the said hook member comprises a U-shaped arm having a general circular contour adapted to frictionally slide into a slot provided in the said lower end of the kite frame, the said hook having a protuberant notch at one end for stopping said hook member in said slot.

4,799,635

SYSTEM FOR DETERMINING AUTHENTICITY OF AN EXTERNAL MEMORY USED IN AN INFORMATION PROCESSING APPARATUS

Katsuya Nakagawa, Kusatsu, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Dec. 23, 1985, Ser. No. 812,929

Claims priority, application Japan, Jun. 24, 1985, 60-138699; Jun. 28, 1985, 60-143026

Int. Cl.[4] G06F *7/58*

U.S. Cl. 364—900 13 Claims

1. A system for determining whether a videographics software program is authorized for use in an information processing apparatus, comprising:

a main data processor unit for executing a videographics software program;

an external memory for storing the videographics software program and for removable connection to said main processor unit, said external memory and main processor unit together constituting the information processing apparatus for executing the videographics software program;

a first authenticating processor device associated with said external memory for executing a first predetermined authenticating program to determine the authenticity of said external memory;

a second authenticating processor device which is installed in said main data processor unit for executing a second predetermined authenticating program to determine the authenticity of said external memory; and

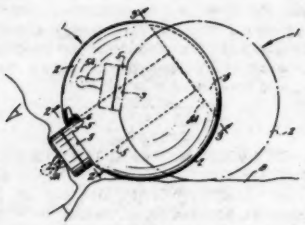
control means for resetting said main data processor unit unless the execution of said first authenticating program by said first processor device exhibits a predetermined relationship to the execution of said second authenticating program by said second processor device.

4,799,636

AUTOMATICALLY POSITIONED HOLDER FOR BABY BOTTLES

William M. Johnson, P.O. Box 70404, Eugene, Oreg. 97401

Filed Aug. 31, 1987, Ser. No. 91,381
Int. Cl.[4] A47D *15/00*
U.S. Cl. 248—102 6 Claims



1. A baby nursing bottle holder for use during the feeding of an infant and comprising in combination,

a bottle enclosure having a generally curved surface on which the holder may rest during feeding, said enclosure having an internal wall surface defining a bottle receiving opening for lengthwise frictional engagement with the bottle when the bottle is inserted into said enclosure, and

a weight of higher density material than said enclosure and housed in the enclosure and defining the end of the bottle receiving opening, said weight located in an offset manner from the center of gravity of the enclosure for imparting rotation to the enclosure and a baby bottle therein at the termination of infant feeding.

4,799,637

DEVICE FOR COUPLING HOOKS TO PEGBOARD

Thomas L. Fahringer, 105 Locust Dr., Brandon, Fla. 33511

Filed Jul. 8, 1987, Ser. No. 71,166
Int. Cl.[4] E04G *5/06*
U.S. Cl. 248—221.2 1 Claim

1. An attachment device for use in combination with a pegboard and a hook, the pegboard being of a predetermined thickness with holes of a predetermined diameter extending therethrough and the hook having a lower portion outwardly bent away from the pegboard for supporting articles, an upper portion inwardly bent toward the pegboard for being positioned through a hole in the pegboard, and an elongated central portion coupling the upper and lower portions, the attachment device including:

a screw constituting the inboard end of the device and being fastenable within a hole in the pegboard, the size of the screw being correlated to the thickness of the pegboard and the diameter of the hole such that crests of the screw are of a diameter larger than the diameter of the hole and the roots of the screw are of a diameter smaller than the diameter of the hole and with the surfaces of the screw which join the crests and roots being axially spaced a distance so that, upon being twisted into the hole, the screw and the device may be positively held in operative position solely by forces exerted by the surfaces of the screw on opposite sides of the pegboard at the peripheries of the hole without deforming the hole; and

a clip constituting the outboard end of the device and coupled to the screw for being positively fastened to the pegboard by the screw, the clip being formed of a pair of symmetrically shaped, resilient support arms which together form a generally semicircular cross sectional configuration in excess of 180 degrees with an opening between the arms on the side of the clip remote from the screw, the clip being of a size so that its opening will allow movement of the central portion of a hook therepast only upon the separating of the arms which thereby facilitates the receipt and releasable retention of a hook by the resilient force of the arms so that the device may effect a permanent attachment of a hook to a pegboard until the hook is physically withdrawn from the clip by overcoming the resilient retention force of the arms retaining the hook, the device being of a reduced size so that when operatively positioned on the pegboard it will extend outwardly form its supporting hole in a radial direction to a distance less than half the distance to all next adjacent holes in the pegboard.

4,799,638

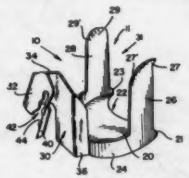
HOLDER FOR A BEVERAGE CONTAINER

Louis Allen, 166 E. 61 St., New York, N.Y. 10021

Filed Jul. 6, 1987, Ser. No. 69,847
Int. Cl.[4] A47K *1/08*
U.S. Cl. 248—311.2 15 Claims

1. A holder for a beverage container adapted for attachment to a chair having a seat frame and a leg member including a cross-bolt for connecting the seat frame to the leg member wherein an interstice is provided between the seat frame and

the leg member, said holder comprising a receptacle for accommodating selected articles, a saddle clip for removably securing the receptacle to the chair and strap means for connecting the receptacle to the saddle clip, said strap means



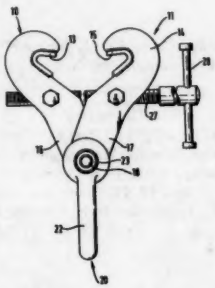
further including a collar portion generally conforming to and partially surrounding the leg member in non-gripping contact, said saddle clip further defining a notched opening for snap-fitting engagement over the cross-bolt wherein the saddle clip is rotatable about the cross-bolt for positioning the receptacle.

4,799,639

CLAMPS

Keith Riley, Fairways, 6, Wood Close, Roughlee, Nelson, Lancashire, England

Filed Mar. 18, 1987, Ser. No. 27,595
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—228 **4 Claims**



1. A clamp for attaching an item to an overhead flanged beam having first and second flanges said clamp comprising:

a. a first jaw having first and second ends, said first end being shaped for engagement with the first flange of said beam;

b. a second jaw having first and second ends, said first end being shaped for engagement with the second flange of said beam;

c. pivot means pivotally connecting together the second ends of the first and second jaws;

d. attachment means connected to said pivot means for attaching said item to said clamp;

e. first swivel means positioned on said first jaw intermediate said first and second ends thereof;

f. second swivel means positioned on said second jaw intermediate said first and second ends thereof;

g. connecting means extending between said first and second swivel means and threadedly engaged with said first and second swivel means, with the engagement with the first swivel means being a left hand thread and the engagement with the second swivel means being a right hand thread, said connecting means for pivoting said jaws towards one another to clamp a beam between the first ends of the jaws;

h. release means for releasing the swivel means from the jaws,

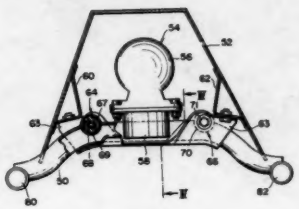
said first jaw being angled intermediate the first and second ends thereof toward the second jaw, and said second jaw being angled intermediate the first and second ends thereof toward the first jaw, to reduce the distance between the first and second swivel means.

4,799,640

VIBRATORY BODY MOUNTING STRUCTURE WITH A VIBRATION-CONDUCTION PREVENTING MECHANISM

Yoshio Fukai, 24-25-326, Asahi-cho, Sagamihara-shi, Kanagawa-ken; Hitoshi Takagi, 611, Oaza-hozumi, Kitsuregwa-cho, Shioya-gun, Tochigui-ken, and Tatsuo Osawa, 9-23, Yayoi-cho 5-chome, Nakano-ku, Tokyo, all of Japan

Filed Dec. 29, 1982, Ser. No. 454,331
Claims priority, application Japan, Mar. 10, 1982, 57-36635
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—559 **12 Claims**



1. A structure for mounting a vibratory body on a support, comprising:

(a) an elongated mounting member having an elasticity and vibratable in a bounce mode and a two-node transverse mode;

(b) means for resiliently connecting the mounting member to the support; and

(c) means for resiliently connecting the mounting member to the vibratory body;

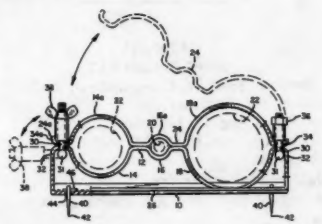
(d) the connection of the mounting member to the support being located at a position at which the phase of bounce-mode vibrations of the mounting member is opposite in sign to that of the two-node-mode transverse vibrations of the mounting member.

4,799,641

ANCHOR DEVICE FOR HOLDING HOSES AGAINST RETRACTING SLIDABLE MOVEMENT

Martin J. Koreski, P.O. Box 370, Goldendale, Wash. 98620

Filed Feb. 9, 1988, Ser. No. 153,950
Int. Cl.[4] F16L *3/22*
U.S. Cl. 248—68.1 **3 Claims**



1. An anchor device for holding hoses against retracting slidable movement comprising:

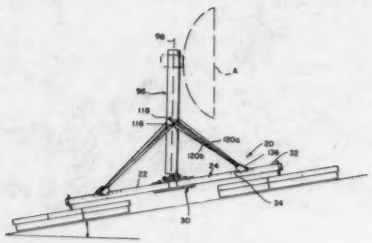
a base member having forward and rearward ends and a bottom surface arranged to support said base member slidably on a carpeted surface,

clamp means on the upper portion of said base member arranged to be releasably secured to a hose intermediate the ends of the latter,

and bottom prong means on said base member allowing said

base member to slide forwardly on a carpeted surface but anchoring said base member and hose clamped therein against a retracting slidable movement on the carpet surface.

4,799,642
ANTENNA MOUNTING
George A. Wright, East Orange, N.J., assignor to RT/Katek Communications Group, Inc., East Orange, N.J.
Filed Feb. 3, 1987, Ser. No. 10,347
Int. Cl.[4] E04H *12/18*
U.S. Cl. 248—516 **23 Claims**



1. An antenna mounting for supporting an antenna above a surface comprising:

(a) base structure means for defining a base structure extending over the surface and securing said base structure to the surface;

(b) an elongated tubular mast having a mast axis, a bottom end and a top end;

(c) mast connection means for connecting said bottom end of said mast to said base structure so that said mast projects generally upwardly from said base structure;

(d) a plurality of elongated struts, each having a strut axis, a mast end and a base end; and

(e) strut connection means for connecting the base ends of said struts to said base structure at spaced apart locations thereon remote from the bottom end of said mast and connecting the mast ends of said struts to said mast remote from the bottom end of the mast so that said strut axes are tangential to said tubular mast, whereby said struts reinforce said mast against twisting about said mast axis and against tilting towards or away from said base structure.

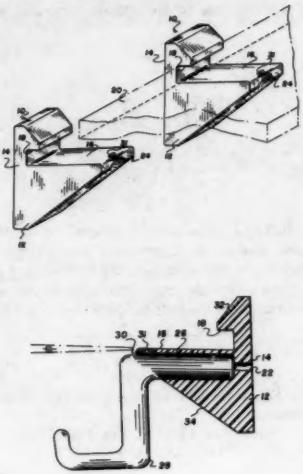
4,799,643
SHELF BRACKET
John S. Shepard, Windsor, Colo., assignor to SISU Shelving Corporation, Fort Collins, Colo.
Filed Aug. 13, 1984, Ser. No. 639,827
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—544 **9 Claims**

1. A shelf bracket comprising:

a rigid unitary body having a vertical back wall and side walls;

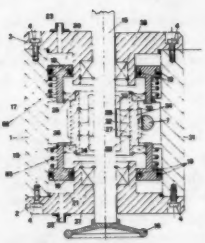
a flat and smooth platform defined in said body to project outwardly away from said back wall a given distance and inclined in the outward direction upwardly at an angle substantially between 1½ and 5 degrees with respect to a plane perpendicularly intersecting said back wall;

a flat and smooth ledge defined in said body to project outwardly away from said back wall generally parallel to said platform, said ledge being spaced above said platform by an amount to accommodate receipt of a shelf board inserted between said platform and said ledge;



and means defined in said body for enabling securement of said body to a mounting surface.

4,799,644
ACTUATOR ACTIVATING ON-OFF VALVES
Umberto Gaianigo, Moatecchio Maggiore, Italy, assignor to G.T.I. du Gaianigo Umberto & Co. Snc, Maggiore, Italy
Filed Jan. 12, 1988, Ser. No. 143,071
Claims priority, application Italy, Feb. 16, 1987, 85510 A/87
Int. Cl.[4] F16K *31/143, 31/54*
U.S. Cl. 251—14 **14 Claims**



1. An actuator device for the activation of no-off valves which comprises:

a supporting body,

a central shaft axially disposed within said supporting body,

a cogged wheel defined by hollow cylindrical walls and disposed within said supporting body coaxial with said central shaft and able to transmit its rotation to said central shaft,

a rack with associated pneumatic cylinders transversely disposed within said actuator device, said pneumatic cylinders activating said rack in its axial direction and in two directions, said rack engaging said cogged wheel,

a pair of free wheels disposed inside the hollow cylindrical wall of the cogged wheel, said pair of free wheels engag-

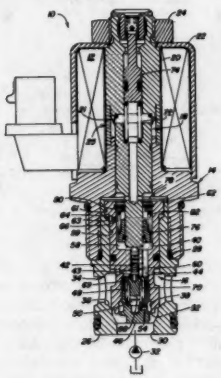
ing themselves integrally and alternately in discordant directions with one of a plurality of rings which is integral with the central shaft of the actuator and such that each of the two free wheels, alternatively, is able to transmit to the central shaft of the actuator the rotation of the cogged wheel, in either one of the two directions, which in turn is caused by the movement of the rack.

4,799,645

PILOT OPERATED HYDRAULIC CONTROL VALVE

Kenneth D. Kramer, and Gregory E. Sparks, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 19, 1988, Ser. No. 145,345
Int. Cl.[4] F16K *31/40*
U.S. Cl. 251—30.04 **15 Claims**



1. A pilot operated control valve comprising:
a housing defining an inlet and an outlet;
a main valve member movable in the housing and cooperating therewith to define a pilot chamber, pressure in the pilot chamber acting directly on the main valve member to move it to control fluid communication between the inlet and the outlet, the main valve member and the housing cooperating to define a damping chamber therebetween;
a damping orifice communicating the damping chamber with the pilot chamber, the damping orifice comprising a single passage which extends through a portion of the main valve member, there being no other passage communicated directly with the damping chamber; and
pilot valve means for controlling the pilot pressure, the pilot valve means including a pilot valve member movable with respect to the main valve member.

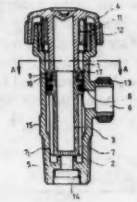
4,799,646

VALVE FOR A GAS CYLINDER OR THE LIKE

Marius Rollett, Ceyzeriat, France, assignor to Society said: ROVIP, Ceyzeriat, France

Filed May 29, 1987, Ser. No. 55,707
Claims priority, application France, Jun. 4, 1986, 86 08038
Int. Cl.[4] B16K *25/00, 31/50*
U.S. Cl. 251—88 **1 Claim**

1. Valve for gas cylinder or the like, comprising:
a valve body including a seat an inlet and an outlet;
a piston axially movable within said valve body, said piston including an end configured to bear against the seat of said valve body;
means for axially moving said piston, said moving means including a hand wheel and means for connecting the hand wheel to said piston while allowing a full and free rotation of the hand wheel relative to said piston for avoiding early wear of said piston when said piston bears against said valve seat; and
means on said piston for axially guiding said piston in said valve body while allowing gas flow therepast, said guiding means including fins extending substantialy radially



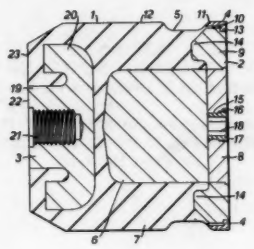
from and longitudinally of said piston while extending from said valve seat to said outlet and thereby communicating the gas flow from said inlet and along said guide fins to said outlet when said piston is moved away from said valve seat.

4,799,647

VALVE ASSEMBLY FOR CONTROLLING FLUID FLOW

Timothy Cook, Oakwood; Joseph G. Craigen, Denton Burn, and Clive A. Morgan, Orchard End, all of England, assignors to British Gas Corporation, England

Filed Jul. 26, 1982, Ser. No. 402,036
Claims priority, application United Kingdom, Aug. 27, 1981, 8126096
Int. Cl.[4] F16K *31/12*
U.S. Cl. 251—356 **12 Claims**



1. A valve assembly for controlling fluid flow in a fluid flow regulator, the assembly including a deformable plug having a cylindrical body with a longitudinal axis which is expanded radially about the longitudinal axis of said cylindrical body to restrict an annular clearance thereabout, said cylindrical body including a circumferential groove radially directed toward the longitudinal axis of said cylindrical body cylindrical.

4,799,648

TRAILER JACK USING FULL SIZED SPARE TIRE

David A. Holm, 8416 Dupont Ave. North, Brooklyn Park, Minn. 55444, and Wesley C. Denault, 2815 39th Ave. South, Minneapolis, Minn. 55406

Filed Dec. 8, 1986, Ser. No. 939,528
Int. Cl.[4] B60S *9/02*
U.S. Cl. 254—420 **18 Claims**

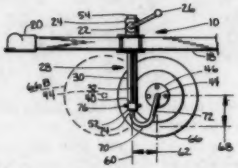
1. An improved combination trailer jack and spare trailer wheel and tire carrier, comprising
(a) a raising mechanism having a post guide, a raising actuator movably mounted in a y direction in said mechanism,

and securement means for securing the post guide and atuator to a trailer tongue;

(b) an elongate jack post operatively connected to the raising mechanism, said post being vertically movable up and down in the post guide and with respect to the securement means;

(c) a spare wheel axle mounted to and vertically co-movable with said post, said axle being generally perpendicular to said post, said axle being vertically positioned between a top and a bottom of said vertically movable post and being spaced upwards of the bottom of the post;

(d) a spare trailer wheel hub mounted on said axle, said hub having wheel mount means thereon for removably mount-



ing thereon a full sized spare trailer wheel and tire in a plane generally parallel to and offset from said post and said guide, with an axis of said hub and the wheel and the tire being spaced upward of said post bottom, with said hub, spare wheel and tire being retractable upwards from below said post guide to a storage position alongside said vertically movable post and alongside and at the same level as said post guide; and

(e) offset structure extending from the post to the axle and providing an offset in an X direction from said post and said guide, said offset structure being movable up and down with the post and being vertically movable past said guide, at least in part.

4,799,649

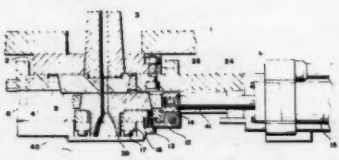
INJECTION VALVE COMPONENTS AND METHOD

Patrick D. King, Rantoul, Ill., assignor to Flo-Con Systems, Inc., Champaign, Ill.

Continuation-in-part of Ser. No. 885,873, Jul. 15, 1986. This application Feb. 17, 1987, Ser. No. 14,999

Int. Cl.[4] C21C *5/48*

U.S. Cl. 266—45 **18 Claims**



1. A method of servicing an injection valve which includes a stationary plate having an orifice therein, a sliding injection plate having an orifice therein, and a carrier plate to which an injection valve is secured, all of which are serviced and actuated by means of a power means engaging the sliding injection plate which moves in combination with the carrier plate comprising the steps of,

at the termination of injection, converting the valve condition to shut-off and permitting the stationary plate orifice to form a sealed orifice,

thereafter removing the carrier plate and its associated sliding plate refractory, and replacing the same with a lance guide plate having a tapered opening therebeneath,

moving the lance guide plate into coaxial relationship with the sealed orifice portion of the stationary plate and the well block nozzle,

utilizing an oxygen lance to open the orifice in the stationary refractory plate and the well block nozzle,

replacing the lancing guide plate with a sliding injection plate and carrier assembly,

thereafter moving the sliding injection plate and carrier into the shut-off position,

and thereafter inserting a bore fill into a orifice in the stationary plate and well block nozzle prior to charging the vessel with a molten metal.

4,799,650

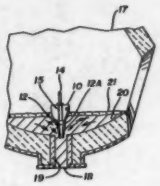
SLAG RETAINING DEVICE WITH VORTEX INHIBITOR

Michael D. Labate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Sep. 23, 1987, Ser. No. 100,354

Int. Cl.[4] C21B *3/04*

U.S. Cl. 266—227 **6 Claims**



1. An improvement in a device for the retention of slag during drawing off of molten metal from a vessel provided with a tap hole, the device comprising a circular closure of a size to effectively close said tap hole and having means for inhibiting the suction generated by the vortex formed above the tap hole to prevent mixture of the slag with the molten metal being discharged through the tap hole, wherein said means comprises an elongated tapered member of hexahedron shape extending downwardly from said closure and having several generally planar faces arranged circumferentially thereof whereby said closure and tapered member generally conform with the shape of the vortex throughout its length, said device having a specific gravity less than the specific gravity of said molten metal and greater than the specific gravity of said slag.

4,799,651

DEVICE FOR INTRODUCING SEPARATED FLUIDS THROUGH INDEPENDENT FLOW PATHS THROUGH BOTTOM TUYERES IN A ROTATING METALLURGICAL CONVERTER

Arturo Lazcano-Navarro; Miguel A. Alcantara, and Jose E. Hernandez-Ruiz, all of Saltillo, Coahuila, Mexico

Filed Dec. 26, 1985, Ser. No. 813,566

Int. Cl.[4] C21C *5/48, 5/50*

U.S. Cl. 166—268 **5 Claims**

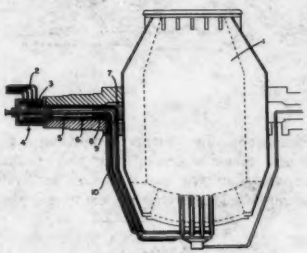
1. A rotary joint apparatus for conveying fluid and powdered materials to a rotatable metallurgical converter from stationary sources, said apparatus comprising;

(a) outer stationary sleeve means having an axis and including a plurality of conduits extending substantially radially from the sleeve means relative to the axis and communicating with a source of flowable material and with an interior portion of the sleeve means through substantially radial ports in the sleeve means;

(b) inner rotatable sleeve means having an axis coaxial with the stationary sleeve means and rotatably carried within the stationary sleeve means, the rotatable sleeve means including a plurality of substantially radially extending ports communicating with respective axially extending passageways that terminate in respective outlets;

(c) rotatable trunnion means connected with the rotatable

sleeves means for rotation therewith, the trunnion means having a plurality of internal axial openings communicating with respective ones of the axially extending passageway outlets of the rotatable sleeve means and with substantially radially extending conduits for connection with tuyeres carried by a rotatable metallurgical vessel carried by the trunnion means and communicating with the interior of the vessel; and



(d) a plurality of stationary annular chambers positioned in axially spaced relationship between the outer stationary sleeve means and the inner rotatable sleeve means, each annular chamber communicating with a source of flowable material through the substantially radial ports in the outer sleeve means and communicating with a respective one of the passageways in the rotatable sleeve means through a respective substantially radial port in the inner rotatable sleeve means.

4,799,652

LINING FOR PROTECTING THE INTERIOR OF A METALLURGICAL VESSEL AND A METHOD FOR FORMING SAID LINING

Jean-Charles Daussan, Marcel-Metz; Gérard Daussan, and André Daussan, both of Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Jul. 23, 1986, Ser. No. 888,484

Claims priority, application France, Jul. 24, 1985, 85 11327

Int. Cl.[4] C21B *3/00*

U.S. Cl. 266—275 **9 Claims**

1. A tundish to be filled with molten metal, comprising a metal casing having a permanent refractory lining, the permanent lining having a temporary destructible refractory lining having an inner surface exposed to the interior of the tundish, said temporary lining being constituted by at least two layers of predetermined compositions and granular sizes applied one above the other in the interior of the tundish in the form of a slurry containing refractory inorganic particles, a binder, and a liquid, one of said layers being, when the tundish is filled with molten metal, in contact with said molten metal and the other layer being in contact with the permanent lining, said one layer having a predetermined composition and granular size of refractory inorganic particles which are such that said one layer is able to sinter throughout its mass under the action of the heat of the molten metal contained in the tundish, and said other layer having a predetermined composition and granular size of refractory inorganic particles which differ from both the composition and the granular size of particles of said one layer such that said other layer does not sinter or sinters only to a partial extent in order to remain friable even when said one layer has completely sintered.

4,799,653

RADIAL ATTENUATION

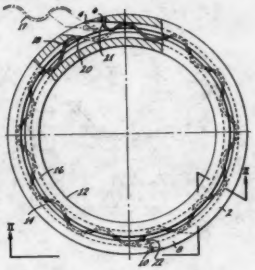
Bernhard Kramer, Markdorf, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 11, 1987, Ser. No. 84,443

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628586

Int. Cl.[4] F16F *1/02*

U.S. Cl. 267—136 **4 Claims**



1. A device for attenuating radial impacts, shocks and vibrations comprising two radially spaced concentric inner and outer elements of annular construction, at least one wavy attenuating means interposed between the inner and the outer elements for axially holding the inner and outer elements in relation to each other and for engaging both of the inner and outer elements in multiple points of engagement thereby resiliently and radially supporting one of the inner and outer elements in relation to the other; there being openings in one of the inner and outer elements for receiving two ends of the wavy attenuating means; and including annular grooves in the inner and outer elements for receiving the wavy attenuating means.

4,799,654

FLUID FLOW FACILITATING ARRANGEMENT WHICH INCLUDES A CONED RING

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 801,357, Nov. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 468,106, Feb. 22, 1983, abandoned, which is a continuation-in-part of Ser. No. 224,769, Jan. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 788,174, Oct. 16, 1985, Pat. No. 4,701,113. This application Jun. 16, 1987, Ser. No. 62,648

Int. Cl.[4] F16F *1/20, 1/34*

U.S. Cl. 267—162 **7 Claims**

1. A fluid flow facilitating device with means for periodic alternating inflow and outflow of fluid over an inlet valve and an outlet valve into and out of an interior chamber inside of the coned portion of a coned ring,

comprising in combination, a first body, said coned ring and a second body with said coned ring inserted between said first and second bodies,

said coned ring comprising said coned portion between a radial inner and a radial outer portion with said interior space formed radially inwards of said coned portion;

wherein said radial outer portion of said coned rings forms a seat face portion,

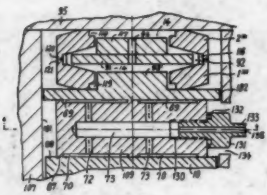
wherein one of said bodies forms a complementary face portion,

wherein a drive means is provided to subject said coned ring to periodic axial expansion and compression, said drive means includes a rotary shaft having a first axis with a relative to said axis accentrically located cylindrical guide face radially around said shaft and a piston with a piston shoe interposed between said coned ring and said eccentric guide face,

wherein a housing portion is provided to hold said shaft and said coned ring,

wherein said housing portion includes a cylindrical portion with a cylindrical inner face around a common axis, said common axis coincides substantially with the axis of said coned rings, said piston has a cylindrical outer face substantially slideably fitting in said cylindrical inner face,

wherein said second body forms said piston shoe provided between said eccentrically located cylindrical guide face



and said piston, while said piston is reciprocated in said cylindrical portion along said common axis and provided on one end of its axial ends with a bearing face to bear thereon a portion of said coned ring,

wherein said piston forms on its other axial end a bearing bed with a constant radius around a center while said piston shoe forms a pivot face with an equal constant radius around said center and a slide face of a part cylindrical configuration complementary to a portion of said eccentrically located cylindrical guide face, and;

wherein said part cylindrical face is laid onto said cylindrical guide face while said pivot face is laid into said bearing bed,

whereby said piston and said coned ring are substantially guided along said common axis to prevent radial departures of said coned ring and piston at compression and expansion of said coned ring away from said common axis, while said piston shoe is pivotably kept on said piston and said slide face of said piston shoe is slideably kept on said eccentrically located, cylindrical guide face.

4,799,655

APPARATUS FOR ADAPTING A CONVENTIONAL TEMPLATE FOR USE IN MOUNTING BINDINGS TO A MONOSKI

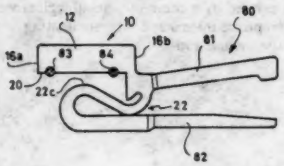
Jean-Pierre Rigal, Mesegny, France, assignor to Salomon S.A., Annecy Cedex, France

Filed Jun. 19, 1987, Ser. No. 63,991
Claims priority, application France, Jun. 27, 1986, 86 09369
Int. Cl.[4] B25B *3/00*
U.S. Cl. 269—2 **5 Claims**

1. An apparatus for adapting a conventional template for temporary positioning on a monoski for purposes of marking positions of mounting screws of a set of bindings comprising:

a. a plate having two parallel edges separated by a distance substantially equal to a width of a conventional ski; and

b. means for immobilizing said plate on an upper surface of a monoski adapted to abut against a lateral side of said monoski and grip a thickness in the region of said lateral side of said monoski, wherein said means for immobilizing comprises an elastically deformable arm extended beneath said plate from one of said parallel edges and cooperating with a lower surface of said plate to effect a gripping



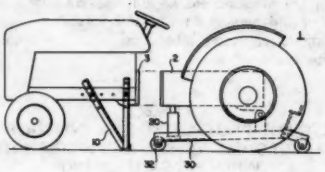
action, said apparatus further comprising a grip having two levers connected to said plate and to said arm such that drawing said two levers towards each other causes the spacing of said arm with respect to said plate to vary.

4,799,656

ROLL-TRACTOR SPLITTER

Peter Puskarich, R.D. #5, Cadiz, Ohio 43907

Filed Jul. 9, 1987, Ser. No. 71,397
Int. Cl.[4] B66F *5/04, 7/28*
U.S. Cl. 269—17 **27 Claims**



1. A tractor splitting stand for separating the front and rear halves of a frameless tractor when the transmission bellhousing is unbolted from the forward half of the tractor, said tractor having at least one tractor engagement hole located in the rear half, comprising:

an articulatable frame having first and second ends;

rolling means connected to said frame for moving said frame;

upright support means on said frame for engaging said tractor engagement holes by pinning said upright support means to said tractor engagement holes, said upright support means comprising a horizontal slide bar and movable upright supports which may be moved horizontally on said horizontal slide bar; and

means for articulating said frame whereby said first end is pivoted with respect to the second end, thereby raising the frame vertically and raising said upright support means.

4,799,657

SWING CLAMP

Douglas P. Miller, New Berlin, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Nov. 24, 1987, Ser. No. 125,008
Int. Cl.[4] B23Q *3/08*
U.S. Cl. 269—24 **10 Claims**

1. A powered work clamping device, comprising:

a housing having an upper and a lower chamber and an intermediate chamber communicating with said upper and lower chambers;

a plunger extending from the housing and adapted to support a work-engaging member at its extending end and an upper piston at its other end, said upper piston being

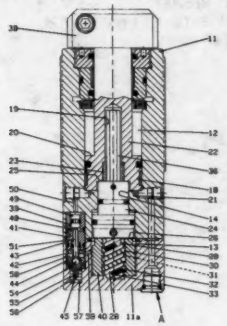
disposed within said upper chamber, said plunger mounted for relative movement about its longitudinal axis between first and second positions and for axial movement between extended and retracted positions;

a lower piston having a major diameter portion disposed in said lower chamber and a minor diameter section disposed in the intermediate chamber of said housing;

indexing means for rotating said plunger between said first and second position;

fluid inlet passageways communicating with said upper and lower chambers and including a first passageway;

a first actuating means communicating with said first passageway for admitting fluid to the upper chamber and below the undersurface of said upper piston and into the



intermediate housing chamber to the surface of said minor diameter section of said lower piston upon operation of said first actuating means;

check valve means;

a second passageway; and

a second actuating means communicating with said second passageway for admitting fluid to said upper chamber above the upper surface of said upper piston and to the lower chamber through said check valve means and below the major diameter section of said lower piston;

said check valve means adapted for restricting fluid from entering the lower chamber from the second actuating means and movable towards fluid restricting position upon non-operation of said first actuating means.

4,799,658

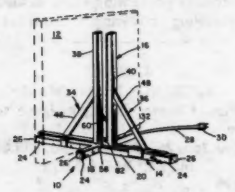
DOOR HOLDER AND ELECTRICAL CARPENTER'S AID

Felix C. Ponce, 6725 Bovey Ave., Reseda, Calif. 91335

Continuation of Ser. No. 798,888, Nov. 18, 1985, abandoned. This application Oct. 13, 1987, Ser. No. 107,907

Int. Cl.[4] B23Q *3/02*

U.S. Cl. 269—133 **12 Claims**



12. In a carpenter's aid, for uprightly supporting an item, having large area sides and a relatively small thickness between the sides, by a clamp supported on a base and having first and second surface spaced from one another to define an entry for reception of the item, means for defining a movable connection between said first and second surfaces to enable respective opening and closing movements therebetween, and means positioned in said entry and coupled to said first surface for receiving the item and for enabling its weight to move the receiving means in a generally gravitationally downward direction and thereby to move said first surface towards said second surface and to clamp the item therebetween under pressure, the improvement comprising a ledge in said entry affixed to said second surface and positioned in the path of movement of the item and its receiving means to stop the movement and to limit the clamping pressure by said surfaces against the item, and in which said base comprises tubes having through passageways an affixed connection to said leg and articulating means coupled to said receiving means for enabling the movement, and electrical wiring extending through the passageways of said tubes, and an electrical plug and at least one electrical socket terminating said wiring and respectively extending from and terminating the passageways of said tubes, said base thereby acting both as a support for the carpenter's aid and as an electrical conduit for said electrical wires.

4,799,659

PIN INSERTION SUPPORT MEMBER FOR CIRCUIT BOARDS

Paul G. Donovan, Palm Beach Gardens, Fla., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 22, 1987, Ser. No. 76,226

Int. Cl.[4] B23Q *3/00*

U.S. Cl. 269—289 R **6 Claims**

1. A support member for pin insertion in circuit boards comprising:

a carrier having a bottom surface and upstanding side walls;

a layer of closely packed filaments on said bottom surface within said side walls, said layer extending a short distance above a top surface of said side walls; and

locating means comprising retractable locating pine mounted in said side walls.

4,799,660

DEVICE FOR FEEDING A PAPER WEB TO A CROSS CUTTER

Wolfgang Pfizenmaier, Neckargemünd, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 85,273, Aug. 10, 1987, abandoned, which is a continuation of Ser. No. 803,538, Dec. 2, 1985, abandoned. This application Mar. 21, 1988, Ser. No. 170,037

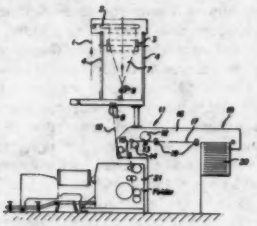
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1984, 3444150

Int. Cl.[4] B42F *13/56*

U.S. Cl. 270—21.1 **1 Claim**

1. Device for feeding a paper web to a cross cutter which is located downstream from a rotary printing machine in a travel direction of a paper web and which delivers cut sections of the paper web in flat disposition, comprising draw rollers and a former disposed downstream from the rotary printing machine for respectively tensioning and folding the paper web in longitudinal direction thereof, additional draw rollers and register rollers located downstream from the first-mentioned draw rollers and said former in the travel direction of the paper web for feeding the longitudinally folded paper web to a cross cutter, a folding apparatus disposed for folding the longitudinally folded paper web adjacent to the cross cutter downstream from the rotary printing machine in the travel direction

of the paper web, said cross cutter and said folding apparatus being separate units independent of one another, and means located downstream from the first-mentioned draw rollers and



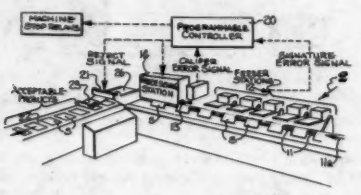
said former and upstream from said cross cutter and said folding apparatus for selectively feeding the folded paper web to said cross cutter and said folding apparatus alternatively.

4,799,661

APPARATUS FOR COMPILING SHEETS IN A BINDING LINE

James W. Nail, Gastonia, N.C., assignor to Craftsman Printing Company, Charlotte, N.C.

Filed Apr. 21, 1987, Ser. No. 40,613
Int. Cl.[4] B65H *39/02*
U.S. Cl. 270—54 **11 Claims**



1. An apparatus for compiling a plurality of differently printed groups of sheets into collated sets, with each of the printed sheets having an indicium thereon at a predetermined location, and with the predetermined location of the indicium on each of the printed sheets of each group being different from the predetermined location of the indicium on each of the printed sheets of the other groups of sheets, and which is characterized by the ability to accurately detect an improperly collated sheet as well as a missing sheet in each collated set, and comprising

a longitudinally directed conveyor means, and drive means for longitudinally advancing said conveyor means,

feeder means for sequentially depositing a sheet from each of said groups onto predetermined spaced locations of said advancing conveyor means and so as to form a set of overlying collated sheets at each of said spaced locations, said feeder means comprising a plurality of feeder stations positioned in longitudinally spaced apart relation along said conveyor means, with each of said feeder stations comprising

(a) sheet supporting means for supporting a stack of one of the groups of sheets,

(b) sheet transport means for sequentially withdrawing the sheets from said stack, and conveying the same along a predetermined path of travel and onto said conveyor means, and

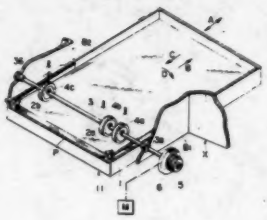
(c) sensor means mounted along said path of travel for detecting whether an indicium is present at the proper predetermined location on each of the withdrawn sheets, and whether a sheet is missing, and such that said sensor means is adapted to identify an improperly collated sheet as well as a missing sheet.

4,799,662

SHEET FEEDING DEVICE

Seiji Sagara; Hiroyoshi Maruyama, both of Yokohama; Hiroyuki Miyake, Inagi; Nobuhiro Kasama, Yokohama; Shinichi Tanada, Machida; Kazuo Kagiura, Tokyo; Takaji Yonemori, Tokyo, and Yuji Hasegawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 856,845, Apr. 21, 1986, abandoned, which is a continuation of Ser. No. 534,666, Sep. 22, 1983, abandoned. This application Feb. 5, 1988, Ser. No. 154,508
Claims priority, application Japan, Sep. 29, 1982, 57-168437; Nov. 19, 1982, 57-202088
Int. Cl.[4] B65H *3/06*
U.S. Cl. 271—114 **12 Claims**



1. A sheet feeding apparatus comprising:

sheet supporting means for supporting at a determined position a set of sheets inserted in a predetermined direction;

a plurality of feed rollers for feeding one by one in said predetermined direction the sheets supported at said determined position;

a drive shaft for supporting said feed rollers at a position where the feed rollers contact the uppermost sheet when the set of sheets are inserted into said determined position to be supported thereat by said sheet supporting means; and

connecting -disconnecting means for disconnectably connecting said drive shaft to a drive source;

wherein said respective feed rollers are supported on said drive shaft such that the feed rollers may independently freely rotate by a predetermined amount, respectively both in said predetermined direction and in a reverse direction thereto when the feed rollers contact the uppermost sheet upon the insertion of the sheet set, whereby when a set of sheets is moved, upon insertion into the apparatus, the feed rollers follow the movement of the sheets, thus eliminating the possibility of friction between the uppermost sheet of the set of sheets and the feed rollers and therefore preventing sheet deviation to prevent creasing, wrinkling or tearing of the sheet.

4,799,663

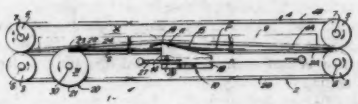
FEEDING MECHANISM

Roman M. Golicz, Clinton, Conn., assignor to G.B.R. Ltd., Chester, Conn.

Filed Jun. 26, 1986, Ser. No. 878,642
Int. Cl.[4] B65H *29/18*
U.S. Cl. 271—199 **26 Claims**

1. A feeding mechanism for stacking and moving sheets of paper and the like comprising means for moving said sheets along a transport path to a stacking area, said stacking area being substantially parallel to said transport path to a stacking area, said stacking area being substantially on the same plate as said transport path, means for holding said sheets stationary in said stacking area and accumulating said sheets in a stack

which is substantially on a plane parallel to said stacking area, means for releasing said stack after a predetermined number of sheets have accumulated in said stack to permit the stack to be moved from said stacking area, said moving means comprising a plurality of upper and lower transport belts located in transverse offset relationship to each other, means for supplying said sheets between said upper and lower belts to cause the



belts to grasp and move the sheets, a deflecting mechanism having an upper plane, said upper transport belt having a lower run in juxtaposed position adjacent said deflecting mechanism in a plane below the upper plane of the deflecting mechanism whereby the movement of a sheet past said deflecting mechanism will move the belt above the upper plane of the deflecting mechanism.

4,799,664

SHEET FEEDER FOR SHEET-PROCESSING MACHINES

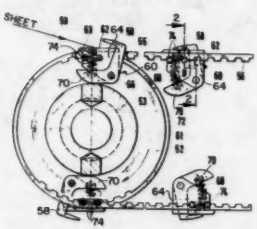
Karl H. Burger, Wiesbaden, Fed. Rep. of Germany, assignor to Neue Rotoprint GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 19, 1987, Ser. No. 16,574

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1986, 3605534

Int. Cl.[4] B65H *5/02*

U.S. Cl. 271—277 **12 Claims**



1. A sheet feeder for sheet-processing machines, having a positively driven, belt means defining an endless revolving path of travel which travels over at least two wheels located at the opposite ends of the path of travel, said belt means has on the top thereof at least one sheet-transporting gripper which is opened or closed in the course of the revolving path,

characterized in that said belt means includes a recess provided at one or more points along the longitudinal extension of said belt means into which recess a support body carrying a gripper mechanism is removably inserted;

each gripper mechanism including an actuating lever depending below said belt means, at least one of said wheels being provided with means defining a circumferential recess having a depth corresponding to the depending portion of said actuating lever which is actuated upon striking or leaving the surface defined by said circumferential recess means, wherein said support body includes a support plate which rests on the outside of said belt means, said support body passing through said belt means and being firmly clamped by means of at least two securing pins that rest on the inside of said belt means and which pass through said support body.

4,799,665

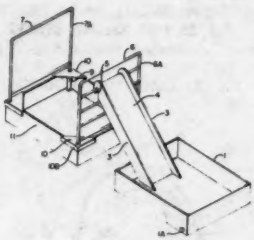
SANDBOX AND SWIMMING POOL PLAYSET

Julie A. Bracy, 3871 S. Fraser, Aurora, Colo. 80014

Filed Jul. 21, 1986, Ser. No. 887,426

Int. Cl.[4] A63B *17/04*

U.S. Cl. 272—1 R **3 Claims**



1. A playset apparatus comprising:

a first open-topped container, adapted for use as a sandbox and having a bottom and sidewalls;

a second open-topped container, adapted for use as a wading pool and having a bottom and sidewalls, said second container being correspondingly shaped but slighly larger than said first container such that said second container can be inverted and telescoped over said first container; and

a pair of removable upstanding support means extending along opposed sidewalls of said first container, said first container including a plurality of socket means secured to the sidewalls thereof, the ends of said upstanding support means being inserted in and supported by said socket means, said upstanding support means being adapted to support said second container in inverted upwardly spaced disposition over said first container.

4,799,666

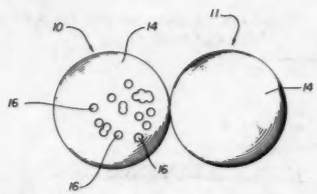
AMUSEMENT DEVICE HAVING CONTROLLED EXPLOSIVE SURFACES

Luis E. Obligio, Buenos Aires, Argentina, assignor to Omranco International Corporation, Agoura, Calif.

Filed Jan. 15, 1987, Ser. No. 3,485

Int. Cl.[4] F42B *4/04*

U.S. Cl. 272—8 N **12 Claims**



1. An amusement device comprising:

a. at least two ball members, at least one of the ball members having a hard surface and a coating of a material which can explode on impact with another ball member;

b. the coating comprising an oxidant and a combustible for creating an explosion, an inhibitor for inhibiting the explosion to a localized area on the surface the ball members, and an adhesive for adhering the oxidant, the combustible, the inhibitor and the adhesive on the surface of the ball members;

c. the adhesive and the inhibitor each comprises between

10% and 14% casein glue and arabic gum by weight to the weight of the coating.

4,799,667

PHYSICAL EXERCISE APPARATUS

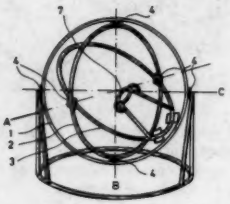
Helmut Suchy, Salzburg, Austria, assignor to Gyroteq Corporation, Minneapolis, Minn.

Continuation of Ser. No. 884,222, Jul. 10, 1986. This application Feb. 23, 1988, Ser. No. 159,233

Claims priority, application Austria, Aug. 7, 1985, 2308/85; Aug. 26, 1985, 2477/85

Int. Cl.[4] A63B *25/08*; A63G *1/00*

U.S. Cl. 272—36 **4 Claims**



1. A physical exercise apparatus comprising a first innermost ring (3) which is mounted rotatably about a first axis (A) in a second larger ring (2), and with a third outermost ring with respect to which the second ring (2) is in turn mounted rotatably about a second axis (B) pointing transversely to the first axis (A) and the third outermost ring (1) being mounted rotatably about a third axis (C) so that an occupant occupying the first innermost ring can assume any angular position in space solely by weight shifting or movement due to the mounting of gimbals effected thereby, characterized in that a support hoop (7) is disposed in the first innermost ring at the level of an occupant's hip, which is connected via rigid struts (8) to the innermost ring (3) said struts being positioned to provide the sole support for said support hoop so that the occupant may support himself for substantially effecting rotational movement solely by gripping the support hoop and may use the support hoop for introducing forces onto the innermost ring by movement of the occupant.

4,799,668

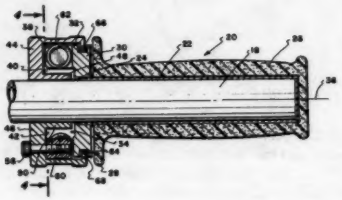
BICYCLE MOUNTED EXERCISING DEVICE

Martin B. Jansen, 29406 Promontory Pl., Agoura Hills, Calif. 91301

Filed Feb. 22, 1988, Ser. No. 158,602

Int. Cl.[4] A63B *21/00, 5/00*

U.S. Cl. 272—73 **6 Claims**



1. In combination with a bicycle, said bicycle having a cylindrical handlebar, said handlebar terminating at a pair of gripping areas, an exercising device connectable to said handlebar at either said gripping area, said exercising device comprising:

a sleeve mounted on a said gripping area, said sleeve having a longitudinal center axis, said sleeve located in a close conforming manner to said handlebar, said sleeve being rotatable relative to said handlebar;

a handgrip fixedly mounted on said sleeve, said handgrip to be graspable by a hand of a human being to affect rotation of said sleeve, said handgrip substantially totally covering said sleeve except for the inner edge of said sleeve;

a concentric disc secured to said inner edge of said sleeve, said concentric disc having a circumferential surface concentrically disposed relative to said handlebar, said concentric disc having an operating surface positioned substantially perpendicular to said longitudinal center axis, a narrow abutment attached to said operating surface and extending outwardly therefrom;

a pair of semi-cylindrically shaped members, fastening means attached to said members for securing together said members into tight engagement onto said handlebar, said members cooperating to form an annular spring chamber, spring means mounted in said annular spring chamber, a portion of said spring means being secured to one of said members, said narrow abutment being located within said spring chamber, rotation of said handgrip causes compressing of said spring means; and

means for interlocking said concentric disc and said pair of semi-cylindrically shaped members, said interlocking means preventing lineal movement of said semi-cylindrically shaped members relative to said concentric disc along said longitudinal center axis, and permitting rotation of said concentric disc relative to said semi-cylindrically shaped members.

4,799,669

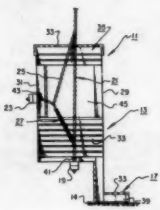
SWING

Appleton, Richard E., 303 S. 9th St., Midlothian, Tex. 76065

Continuation-in-part of Ser. No. 019,257, Feb. 26, 1987, abandoned. This application Sep. 25, 1987, Ser. No. 100,906

Int. Cl.[4] A63G *9/16*

U.S. Cl. 272—85 **10 Claims**



1. A balanced, tiltable swing swingingly suspended from an upper support and above a lower support comprising:

a. a main body portion having a seat for supporting at least one person occupant;

b. a foot support portion connected with said main body portion and extending downwardly such that said foot support portion will contact the lower support when the swing is tilted forward;

c. a main tilt beam traversing longitudinally of said main body support and disposed near the center of gravity of said main body support with said main body support substantially balanced thereover when unoccupied and operationally hung and such that said main body support can be tilted one of forward and backward with very little unbalancing force;

d. a plurality of main lineal support members, with at least one member being disposed at each end of said main tilt beam; said respective main lineal support members being respectively connected with the upper support and with said main tilt beam;

e. a back support means connected with said main body

portion and disposed a predetermined distance above said seat;

f. a plurality of auxiliary lineal supporting members, disposed at least one at each end, connected with respective said lineal support members and with said back support beam; and

g. a biasing means connected intermediate respective said main lineal support member and said auxiliary lineal support member at each end for controlling the force required to tilt said swing backwardly by an occupant person and the degree of tilt;

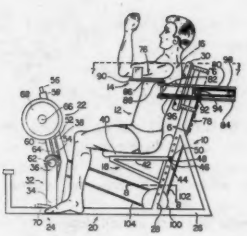
such that an occupant person can step onto said foot portion and be seated in said main body portion, tilt said main body portion backwardly easily and swing by a simple oscillating movement of the head at the proper frequency.

4,799,670

EXERCISE APPARATUS

Neil Williamson, 1814 E. Highway 14, Janesville, Wis. 53545

Filed Jun. 12, 1987, Ser. No. 60,821
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—117 **14 Claims**



1. An exercise apparatus for exercising the arm muscles and upper torso muscles of a user, said apparatus comprising:

a frame;

weighted means pivotally connected to said frame, said weighted means being positioned such that the user is permitted to lift said weighted means with the user's arms;

said weighted means including:

a first arm pivotally secured to said frame, said first arm having a proximal and a distal end;

a first loaded means secured adjacent to said distal end of said first arm for pivoting said first arm towards a first position thereof in which the user rests, said first loaded means being lifted by the user away from said first position such that said first arm pivots relative to said frame;

a second arm pivotally secured to said frame such that said first and second arms pivot about the same pivotal axis, said second arm having a proximal and a distal end;

a second loaded means secured adjacent to said distal end of said second arm such that the user is permitted to selectively lift one or both of said loaded means; and

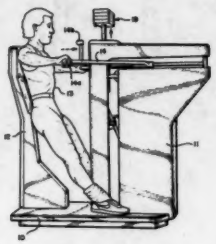
user operated pedal release means for selectively changing the weight of said weighted means during use of the apparatus such that (in use of the apparatus) when the user has repeatedly lifted said weighted means a predetermined number of times, the user operates said release means to change the weight to be lifted so that the optimum stress is applied to the muscles being exercised.

4,799,671

WEIGHT LIFTING EXERCISE APPARATUS

Lynn D. Hoggan, Sandy; Earl Van Wagoner, III, West Jordan, and Edward N. Balogh, Salt Lake City, all of Utah, assignors to Hoggan Health Industries, Inc., Draper, Utah

Filed Oct. 8, 1986, Ser. No. 916,641
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 **20 Claims**



1. Weight lifting apparatus for exercising the human body, comprising a stationary platform for receiving and supporting a stack of weights to be lifted; a framework providing a user accommodation location adjacent to said platform and supporting said platform at an elevated level, relative to a user sitting or standing at said user accommodation location and facing said stack, such that the position of the stack of weights will correspond approximately with the position of the user's head; weight carrier means including an elevator platform, and weight connection means rising substantially vertically from said elevator platform and extending in close association with said stationary platform and with the position of the stack of weights thereon so the user can conveniently select a desired number of weights from said stack for connection with said weight connection means; means operable by a user at said user accommodation location for attaching selected weights to said weight connection means; operating means arranged to be engaged by at least one body member of the user of the apparatus for muscle exercise; and forcetransmitting means interconnecting said operating means with said carrier means.

4,799,672

POWERLIFT COMPETITION SAFETY DEVICE

William L. Barrett, 295 Maplewood Ave., Whitehall, Ohio 43213

Filed Jan. 4, 1988, Ser. No. 140,622
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **6 Claims**

1. A weightlifting apparatus operable to support a barbell comprising:

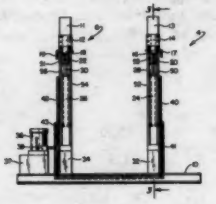
(a) a pair of spaced-apart, substantially parallel vertical support members, each having an upper end and a lower end;

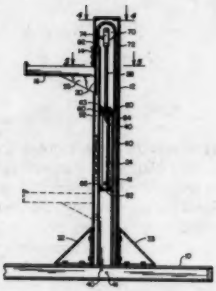
(b) a base supporting said support members;

(c) each said support member bearing synchronously and selectively movable, horizontally projecting spotting arms which are disposed in substantially the same horizontal plane and are adapted to receive a barbell;

(d) a rod and cylinder assembly coupled to each of said spotting arms, said coupling substantially situated in said upper ends of each of said support member and said assemblies being fluid actuable for synchronous movement of said spotting arms, wherein said coupling means includes a weight support carriage affixed to each said spotting arm, a lift chain affixed to each said weight support carriage and each said support member, and a sheave affixed

to each of said rods, said lift chain being trained about said sheave; and,





(e) an actuating means for said assemblies, said assemblies being fluid actuable for synchronous movement of said spotting arms.

4,799,673

BENCH PRESS SAFETY APPARATUS

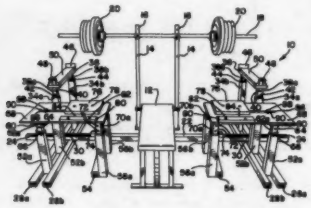
Robert W. Selle, 6157 Pershing, Downers Grove, Ill. 60516, assignor to Robert Selle, Downers Grove, Ill.

Filed Nov. 16, 1987, Ser. No. 121,133

The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **7 Claims**



1. A bench press safety apparatus for weight lifters using a barbell with weight discs thereon, said apparatus comprising a connector beam, a left- and a right-hand safety support, each of said safety supports joined to said connector beam to secure said safety supports at a fixed distance apart and lend stability and rigidity thereto, each of said safety supports providing an upper horizontal surface to support the ends of said barbell in the event of a failed exercise or dropping of the barbell by a weight lifter using said apparatus, thus precluding injury to said weight lifter, a left- and a right-hand unloading shelf, each shelf providing a lower horizontal surface positioned at a lower level than said upper horizontal surface of said corresponding safety support and spaced laterally inwardly of said upper horizontal support for receiving and supporting said weight discs, means mounting each of said unloading shelves for selective lateral adjustment with respect to said weight discs whereby said weight lifter, having been protected from injury during a failed exercise or dropped barbell by said barbell ends falling on said safety supports, may then relocate said barbell and weight discs from a first position in which said safety supports support said barbell ends, to a second position in which said unloading shelves receive and support said weight discs to facilitate unweighting of the barbell and resumption of the exercise routine.

4,799,674

WEIGHT LIFTING SAFETY DEVICE

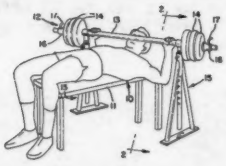
Douglas C. Ochab, P.O. Box 502, Chicago, Ill. 60690

Continuation-in-part of Ser. No. 816,625, Jan. 6, 1986, Pat. No. 4,711,449. This application Nov. 12, 1987, Ser. No. 119,639

The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **6 Claims**



1. A weight lifting safety device adapted for use in bench-pressing exercises, said device comprising:

weight supporting bar means for grasping in a horizontal position by a user and for receiving weights on generally opposite ends thereof;

bar and weight support means depending vertically from said bar means adjacent opposite ends thereof for supporting said bar means adjacent opposite ends thereof for predetermined elevated position relative to a supporting surface;

an attachment assembly fixed to the upper end of each support means and extending horizontally thereof, each said attachment assembly having a sleeve, said bar means extending through said sleeve of each of said attachment assemblies and being rotatable therein;

each of said bar and weight support means includes a horizontal base plate and generally vertical support member means for joining said base plate and said attachment assembly;

rotation dampening means for dampening relative rotation between said weight supporting bar means and said attachment assembly; and

said rotation dampening means includes friction pad means for exerting radially directed friction forces between said attachment assembly and said weight supporting bar means.

4,799,675

ARM LOCKING DEVICE FOR WEIGHTLIFTERS

George L. Helmer, 4129 Claudia Ave., Rosemead, Calif. 91770

Filed Apr. 7, 1987, Ser. No. 35,394

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **9 Claims**

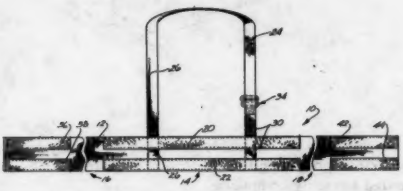
1. A arm locking device for use by weightlifters comprising: An elongated flexible and foldable strap which is substan-

tially non-stretchable in its axial dimension, the strap having a central portion for overlying the chest region of a weightlifter; a left end portion long enough to wrap around the left arm of the weightlifter by extending between the chest and the left elbow, behind the left triceps, over the left biceps, and then to an overlapping position on the central portion of the strap; and a right end portion long enough to wrap around the right arm of the weightlifter by extending between the chest and the right elbow, behind the right triceps, over the right biceps, and then to an overlapping position on the central portion of the strap;

a neck loop rigidly affixed to spaced apart positions on the central portion of the strap substantially equidistantly between the ends of the strap for extending away from the strap a sufficient distance to wrap around the neck of the weightlifter during use of the arm locking device;

elongated friction fastening means on the central portion of the strap extending substantially parallel to the axial dimension of the strap;

left fastening means comprising an elongated friction fastener on the left end portion of the strap spaced from the fastening means on the central portion of the strap and extending generally parallel to the axial dimension of the



strap for providing an infinitely adjustable and axially continuous means of attachment to the friction fastening means on the central portion of the strap to securely hold the left end portion of the strap in a fixed position wrapped in a loop of adjustable size around the left arm of the weightlifter; and

right fastening means comprising an elongated friction fastener on the right end portion of the strap spaced from the fastening means on the central portion of the strap and extending generally parallel to the axial dimension of the strap for providing an infinitely adjustable and axially continuous means of attachment to the friction fastening means on the central portion of the strap to securely hold the right end portion of the strap in a fixed position wrapped in a loop of adjustable size around the right arm of the weightlifter, so that the left and right arms of the weightlifter are held in a locked position with the fastened end portions of the non-stretchable strap keeping the elbows of the left and right arms close to the body by resisting outward movement of the left and right arms as weight is being lifted, with the flexibility of the strap in its fastened position being sufficient to offer substantially no resistance to the weightlifting exercise.

4,799,676

HYDRAULIC EXERCISING MACHINES

John H. Sheppard, 4 Edgehill Avenue, Llanishen, Cardiff, and Jonathan D. Moore, Timberleigh, West End, Magor, Gwent., both of Great Britain

Filed Aug. 25, 1986, Ser. No. 899,960

Claims priority, application United Kingdom, Aug. 29, 1985, 8521538

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—130 **6 Claims**

1. An exercising machine, comprising

(a) a frame;

(b) an exercise member connected with said frame for movement relative thereto;

(c) a hydraulic piston and cylinder unit connected between said frame and said member for providing a biasing force resisting movement of said member relative to said frame; and

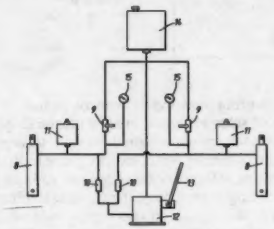
(d) hydraulic control means for controlling the biasing force of said piston and cylinder unit, said hydraulic control means including

(1) a pump for pumping hydraulic fluid to said piston and cylinder unit;

(2) a hydraulic line connecting said pump with said piston and cylinder unit, whereby said pump is operable to establish a predetermined starting pressure within said piston and cylinder unit;

(3) a pressure gauge connected with said hydraulic line for registering the hydraulic pressure therein; and

(4) pressure accumulator means incorporating a compressed gas and connected with said hydraulic line for



pressurization by said hydraulic fluid, said accumulator means comprising

(i) first and second accumulator units hydraulically connected in series, each of said units being connected with said hydraulic line;

(ii) an on/off valve arranged in the series connection between said units separate from said hydraulic line; and

(iii) a two-way valve link arranged in said hydraulic line between said pump and the line connections of said first and second accumulator units, said two-way valve link being selectively movable between a first position connecting said pump solely with said line connection to said first accumulator unit, and a second position connecting said pump solely with said line connection to said second accumulator unit, whereby the volume of said accumulator means communicating with said hydraulic lines may be selected in accordance with the selected positions of said on/off valve and said two-way valve link.

4,799,677

VIDEO GAME HAVING VIDEO DISK READ ONLY MEMORY

Jeffrey E. Frederiksen, Arlington Heights, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 529,046, Sep. 2, 1983, abandoned. This application Feb. 24, 1986, Ser. No. 832,903

Int. Cl.[4] A63F *9/22*

U.S. Cl. 273—1 E **16 Claims**

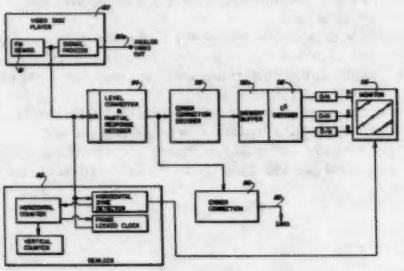
1. In a video display system having means for displaying video imagery and an input means responsive to an operator for providing operator control signals, a storage and retrieval system comprising:

means for storing data representing digital video data signals for generating video imagery on the display means, said storage means including: means for compressing said digital video data signals, means for combining said compressed digital data signals with video control signals and

means for converting to multi-level signals wherein said converted multi-level signals are stored as said data;

means coupled to said storage means, said input means and the display means for controlling the display of selected video imagery represented by the data stored in the storage means, said displayed video imagery being selected in response to said operator control signals;

means coupled to said storage means and said control means



for recovering said video control signals to control the display of selected video images on the display means;

level converter means coupled to said storage means and said control means for converting the multi-level signals representing selected video imagery to binary signals;

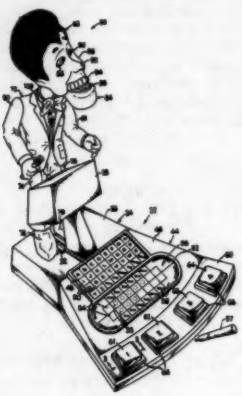
a first decoding means for expanding said binary signals to transform said signals to said digital video data in uncompressed form, said video data being coupled to the display means for the display of the selected video imagery.

4,799,678

ELECTRONIC GAME WITH ANIMATED HOST

Rouben T. Terzian, Chicago; Jeffrey D. Breslow, Highland Park; Donald A. Rosenwinkel, Oak Park, and John V. Zaruba, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 6, 1987, Ser. No. 12,084
Int. Cl.[4] A63F 9/00; A63H 13/00
U.S. Cl. 273—1 E **13 Claims**



1. A game including:

a base;

an animated character mounted on the base;

player input means carried by the base;

the player input means including a first set of input means common to all players and a second set of input means individual to each player;

program means containing game play instructions;

audio means; and

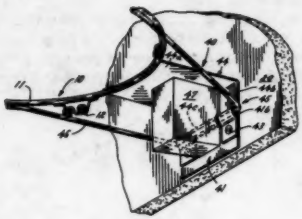
means interfacing the animated character, player input means, program means and audio means so that the character effectively hosts play of the game including giving instructions on play of the game.

4,799,679

REFLEX MOUNTING ASSEMBLIES FOR A BASKETBALL GOAL

Hugo A. Obram, 309 W. Walnut, Millington, Ill. 60537

Filed Oct. 22, 1987, Ser. No. 112,505
Int. Cl.[4] A63B 63/08
U.S. Cl. 273—1.5 R **12 Claims**



1. An assembly for reflexably mounting a normally horizontal basketball goal hoop to a vertical backboard, which reflex mounting assembly comprises:

(a) a base plate normally attached to the front face of said backboard;

(b) an L-shaped bracket which comprises a normally horizontal portion, to which a hoop is attached, and a normally vertical portion normally resting against the front face of the upper portion of said base plate;

(c) a hinge for pivotally connecting the lower edge of said normally vertical portion of said L-shaped bracket to an interior region of the front face of said base plate; and

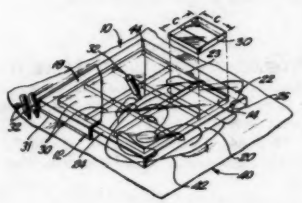
(d) a preloaded resilient mass disposed between the lower face of said normally horizontal portion of said L-shaped bracket and the front face of the lower portion of said base plate.

4,799,680

TRANSPARENT PUZZLE

Deborah M. Weimar, 25 Macopin Ave., Upper Montclair, N.J. 07043

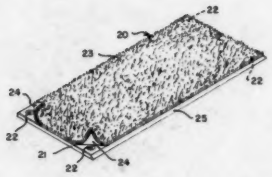
Filed Nov. 18, 1987, Ser. No. 121,936
Int. Cl.[4] A63F 9/10; G09B 11/06
U.S. Cl. 273—157 R **18 Claims**



17. A puzzle comprising: a plurality of transparent puzzle pieces; a base defining a puzzle recess dimensioned to receive

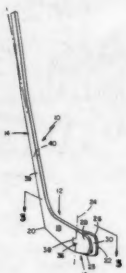
the transparent puzzle pieces and a glue applicator means for removably placing glue on the puzzle pieces to define indicia thereon.

4,799,681
BASEBALL RUNNER PADS
Albert M. Pipik, Box 203, Main St., Allenport, Pa. 15412
Filed Sep. 8, 1986, Ser. No. 904,985
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—25 **5 Claims**



1. An auxiliary safety base pad particularly for the first base position of soft ball and baseball fields comprising a generally rectangular safety base pad member adapted to be fastened alongside the conventional base pad and extend across the running lane and adjacent first base whereby the runner can tag the rectangular safety base pad member instead of the conventional base and thereby reduce the danger of collision between the runner and the player covering first base, a concealed fastener means at each corner of the safety base pad adapted to engage the safety base pad and hold it fixed in place, said fastener means having at least one spike, said safety base pad having a base of hard rubber and a top cover of outdoor carpeting, said hard rubber base having metal grommet fixed therein at each corner to receive said spike, said top cover being loose at each corner sufficient to permit access to each grommet for inserting said spike and for concealing said spike.

4,799,682
HOCKEY STICK
Owen P. Hughes, 155 Messinger St., Canton, Mass. 02021
Filed Apr. 1, 1987, Ser. No. 34,032
Int. Cl.[4] A63B *59/00*
U.S. Cl. 273—67 A **5 Claims**



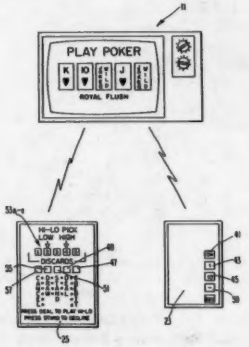
1. In a hockey stick having a handle, and an elongated blade extending from a heel portion at one end of said handle and terminating in a bifurcated toe portion at an end spaced from said heel portion, said blade defining a concavely curved forehand puck striking surface terminating in a fore toe segment and a backhand puck striking surface terminating in a back toe segment,

the improvement wherein

said backhand puck striking surface terminating in said back toe segment is concavely curved along at least a portion of its length, and

said fore toe segment and said back to segment are spaced apart, have an open space between them, define an acute angle between them, and are longer than they are thick so as to allow said toe segments to flex independently for improved puck control on the forehand and on the backhand.

4,799,683
INTERACTIVE VIDEO GAME OF CHANCE AND PLAYER CONTROLLED SUBSYSTEM THEREFOR
George M. Bruner, Jr., Willow Grove, Pa., assignor to Tekbilt, Inc., Oreland, Pa.
Filed Sep. 16, 1986, Ser. No. 908,049
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—138 A **3 Claims**



1. A remote control system for playing a game upon a color television receiver having red, green and blue video signal circuit means for driving at least one electron gun, means for amplifying an audio signal, means for generating a composite sync signal, and circuit means receiving the composite sync signal for controlling a color picture tube with at least a horizontal sync signal and a vertical sync signal, wherein a broadcast received by the color television receiver may be viewed interchangeably with the game, each without interference to the other, said remote control system comprising:

supervisory transmitter means for remotely transmitting a first signal having encoded thereon a first plurality of commands including a display command for selectively displaying the game or the broadcast;

player transmitter means for remotely transmitting a second signal having encoded thereon a second plurality of commands;

wherein said first and second signals comprise infrared signals;

means for receiving said first and second encoded signals;

a main enclosure, including a power supply, a solid-state logic board having programmable means for simulating the game in response to said first and second plurality of commands, and means coupled between said receiving means and said logic board for decoding said first and second encoded signals to produce said first and second plurality of commands; and

a transfer unit coupled between said main enclosure and the circuit means for controlling the color picture tube, said transfer unit being adapted to bypass the composite sync signal and further coupled to the video signal circuit means for driving the at least one electron gun in response

to a third plurality of commands produced by said logic board responding to said first and second plurality of commands;

wherein said supervisory transmitter means and said player transmitter means each comprise:

a plurality of push buttons for respectively selecting said first and second plurality of commands;

integrated circuit means coupled to said plurality of push buttons for respectively outputting said first and second plurality of commands;

a transistor amplifier coupled to receive the commands output from said integrated circuit means; and

a pair of light emitting diodes coupled to said transistor amplifier and adapted to emit infrared light in response to said first and second plurality of commands.

4,799,684

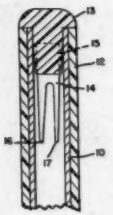
GOLF PUTTER INCLUDING DIVOT REPAIR DEVICE

Joseph F. Rango, 74470 Fairway Dr., Palm Desert, Calif. 92260

Filed Oct. 23, 1987, Ser. No. 111,864

Int. Cl.[4] A63B *53/00*

U.S. Cl. 273—162 F **1 Claim**



1. A golf putter comprising a shaft having a hand grip at the end thereof which surrounds a hollow portion of said shaft, and a divot mending device positioned within the hollow end of said shaft and removable therefrom, said divot mending device comprising

(a) a tined strip which provides divot mending capability;

(b) a conical sleeve formed of resilient material the lower end of which surrounds and engages the upper end of said tined strip;

(c) the upper end portion of said conical sleeve being dimensioned to frictionally slide within and engage the interior wall of said hollow portion at the end of said shaft and become wedged therein under pressure;

(d) said conical sleeve being shaped at its upper extremity to form an end cap for said shaft.

4,799,685

SAILBOAT RACING BOARD GAME

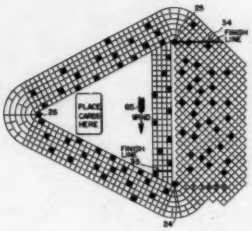
Galen W. Hoffman, Jr., 75 Cross St., Westerly, R.I. 02891

Filed Mar. 13, 1987, Ser. No. 25,645

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—246 **15 Claims**

1. A sailboat racing gameboard for a game played with sailboat game pieces which comprises a surface area marked off into a gridwork of squares; fixed indicia for indicating a fixed wind direction; a plurality of indicia on the surface for representing marker buoys, said marker buoy indicia being arranged in a configuration to form a race course having a plurality of connected legs in the area marked off into squares wherein the squares of each leg are contiguous; said legs being selected from the group consisting of broad reach legs, beam reach legs, upwind legs, downwind legs and combinations thereof; said course including at least one upwind leg and a downwind leg; said squares of the upwind and downwind legs being oriented in different directions; said squares of the upwind leg being formed by the intersection of two sets of generally parallel lines, each set of which is oriented in a direction which is diagonal with respect to the fixed wind direction so that sailboat game pieces can be tacked in an upwind direction which is diagonal with respect to the fixed wind direction but not diagonal with respect to the orientation of the squares; said squares of the downwind leg being formed by the intersection of one set of generally parallel lines which are generally parallel to the fixed wind direction and another set of generally parallel lines which is generally perpendicular to the fixed



wind direction; and said squares of all other legs being formed by the intersection of one set of generally parallel lines which is generally parallel to the leg and another set of generally parallel lines which is generally perpendicular to the leg; and said surface area further comprising a set of distorted squares for connecting together the squares of different legs in which the squares are not oriented in the same direction with respect to the fixed wind so that all the squares on the board are contiguous.

4,799,686

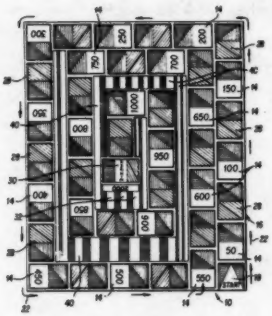
BOARD GAME APPARATUS FOR A BANKING GAME

Eduardo S. Martinez, 2371 Collins Ave., Apt. B-338, Miami Beach, Fla. 33139

Filed Dec. 19, 1986, Ser. No. 943,501

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—249 **4 Claims**



1. A board game apparatus for playing of a banking game for two or more players, one player being designated banker, comprising:

a plurality of playing pieces, each piece representing each player and having means to distinguish said piece of one layer from the pieces of other players;

a generally rectangularly configured game board of substantially stiff, rigid materials:

a series of consecutive game stations indicated on the board from a start station to a winner station;

said series of consecutive game stations forming a game path

between the start station and the winner station and arranged in a contoured pathway defining generally a spiral configuration progressing from a peripheral position of the game board toward the center thereof;

toy printed paper money;

selected ones of the series of game stations disposed in a fixed sequence having thereon numeric indication means for transacting specific amounts of money between players and with the banker, said amounts increasing in order from the start station toward the winner station;

selected ones of the series of game stations disposed in a fixed sequence, having no numeric indications thereon, interposed between said stations having numeric indications thereon;

a plurality of playing tokens, each token representing a player's ownership of one of the selected game stations having numeric indication means thereon;

said series of consecutive game stations adapted to receive said playing pieces and tokens thereon; and

at least one die to determine stations advanced by a player as players advance along the consecutive game stations toward the winner station.,

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4,799,687

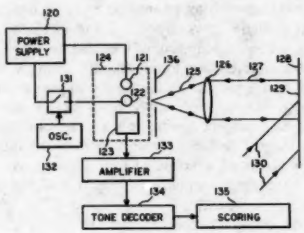
PROJECTED IMAGE TAG GAME

Dennis W. Davis, and Russell D. Davis, both of 10740 Eland St., Boca Raton, Fla. 33433

Filed Feb. 18, 1987, Ser. No. 16,012

Int. Cl.[4] A63B *67/00*; F41J *9/14*

U.S. Cl. 273—312 **5 Claims**



1. A light projection tag game wherein players may attempt to accomplish a tag by causing the superposition of projected images on a gaming surface, said game comprising optical transceiver means for projecting said images onto said gaming surface and detecting said image light reflected from said gaming surface so as to sense superposition of said images, whereby said images are projected from multiple locations and caused to move in pursuit action across said gaming surface, said transceiver comprising:

a. A light-emitting device which projects a beam of light along a first optical axis;

b. a lens with focusing means incident to said beam for projecting an image on a distant surface along said first optical axis;

c. a lens and detector assembly located along a second optical axis for detecting light reflected from said distant surface, wherein said assembly has angular adjustment means for causing said second optical axis to intersect said first optical axis at the location of said projected image, said assembly having field of view adjustment means that allows said detector to receive light only from area of said projected image on said gaming surface;

d. electronic means for processing electronic signals resulting from optical detection of said received light and producing output indicative of said tag;

wherein said projected image can be caused to move across said gaming surface by manual pointing of said transceiver by said player, wherein said light-emitting device is an assembly emitting visible light and modulated infrared light, said modulated infrared light having modulation characteristic of particular said transceiver, said detector comprising an infrared detector, said processing means responsive to said modulation characteristic of an opponent transceiver, said modulated infrared light source and said infrared detector functions provided by a single lightemitting diode, said light-emitting diode having electronic means for alternating connection to transmitter power and to said detector processing means.

4,799,688

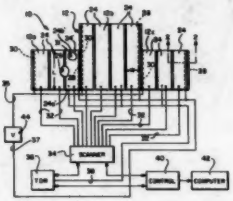
LIVE FIRE TARGET SYSTEM

George A. Kellman, Rochester; Richard E. Flower, Macedon, and Harvey L. Kidder, Geneseo, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1987, Ser. No. 7,211

Int. Cl.[4] F41J *1/08, 5/00*

U.S. Cl. 273—371 **28 Claims**



23. A target system comprising:

a dielectric support defining a target surface;

at least one electrically conductive strip disposed on said target surface;

sensing means connected to said strip for generating a pulsed electrical effect so as to detect the size and location of any hits through said target.

4,799,689

WALL FEEDTHROUGH

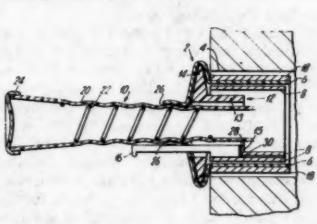
Nolf, Jean M. E., Hamme-Mille, Belgium, assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 13, 1987, Ser. No. 37,744

Claims priority, application United Kingdom, Apr. 15, 1986, 8609089

Int. Cl.[4] F16J *9/02*; F16L *3/04, 5/02*

U.S. Cl. 227—9 **6 Claims**



3. A device for forming a seal between a duct and a substrate carried by the duct, comprising:

a sealing member that can provide a seal between the duct and the substrate,

a biasing member that can be operated after positioning of the sealing member in the duct to provide a resiliently biased engagement between the sealing member and the duct; and

the sealing member comprising a first portion that can en-

gage the substrate and a generally cylindrical portion that can be expanded by the biasing member to engage the duct

an insert which can be positioned between the substrate in the duct and the sealing member, through which insert the biasing member can be operated externally of the substrate,

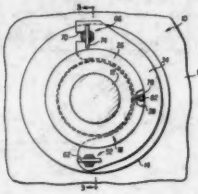
the insert member being annular and comprising a first portion having an external dimension such that is can be positioned within the biasing member and a second portion having an external dimension such that it projects beyond the edges of the duct.

4,799,690

SANITARY SHAFT SEAL ASSEMBLY

Valentino Gabriele, Baltimore, Md., assignor to J. C. Pardo and Sons, Baltimore, Md.

Filed Mar. 24, 1988, Ser. No. 172,555
Int. Cl.[4] F16J *15/54*
U.S. Cl. 277—9 **6 Claims**



1. A seal assembly for sealing a rotary shaft extending through a wall in both static and rotary modes and being capable of rapid assembly an disassembly for cleaning with out the use of tools, comprising:

support ring means fixed to the wall and having a bore formed therein, the shaft extending through the bore in said support ring means;

seal retainer means disposed at least partially within the bore of the support ring means, the seal retainer means having a bore extending therethrough, the longitudinal axes of the bores being coincidental, the shaft extending through the bore in the seal retainer means with sufficient clearance to rotate therewithin, the seal retainer means having a first seal race formed therein and facing the shaft and a second seal race formed therein and facing the portion of the support ring means, the seal retainer means having a groove formed therein in a portion thereof disposed exteriorly of the support ring means;

first and second sealing elements disposed respectively within the first and second seal races and sealing respectively against the shaft and the support ring means;

displacement means for holding the seal retainer means relative to the support ring means and the shaft and being manually displaceable to allow manual removal of the seal retainer means from the support ring means, the displacement means comprising a substantially C-shaped seal compression element having first and second end portions, the first end portion having an open slot formed therein and the second end portion having an aperture formed therein, at least portions of inner edge portions of the seal compression element fitting into at least portions of the groove formed in the seal retainer means when the displacement means occupies a position holding the seal retainer means relative to the support ring means; and,

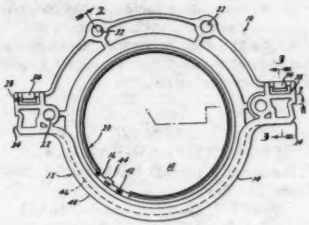
locking means for holding the seal compression element in place relative to the seal retainer means and the support ring means, the locking means being manually separable from the displacement means, at least portions of the locking means being received in the open slot formed in the first end portion of the seal compression element, displacement of the seal compression element away from the locking means causing the locking means to be moved out of the slot, thereby freeing the seal compression element from the locking means.

4,799,691

REAR CRANKSHAFT SEAL HOUSING WITH INTEGRALLY BONDED SEAL

Bernard G. Stritzke, Hanover Park, and Brian F. Rericha, Downers Grove, both of Ill., assignors to Microdot Inc., Darien, Conn.

Filed Feb. 22, 1988, Ser. No. 158,395
Int. Cl.[4] F16J *15/10*
U.S. Cl. 277—12 **4 Claims**



1. A seal housing with integrally bonded seal comprising

a seal housing comprising an annular body portion having an internal radially inwardly extending perforated flange defining a central longitudinal circular aperture; a plurality of bores extending longitudinally through said body portion; and a pair of diametrically opposed projections extending radially outwardly from said body portion, each of said projections having a bore extending transversely thereof within a plane normal to the longitudinal axis of the central aperture of said housing and having a cavity extending normally of the transverse bore and intersecting therewith;

an annular sealing element formed of an elastic material molded to the internal flange of said housing, said elastic material flowing through the perforations in the internal flange during such molding, whereby said sealing element is mechanically bonded to said housing; and

a female fastener element situated within each of the cavities of the projections of said housing, whereby a male fastener element advanced through the transverse bore of each projection is secured relative thereto by said female fastener element.

4,799,692

RADIAL PRESSURE FLANGE SEAL

Thomas H. Batzer, Livermore, and Wayne R. Call, Tracy, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 895,643, Aug. 12, 1986, abandoned.
This application Sep. 15, 1987, Ser. No. 96,756
Int. Cl.[4] B65D *53/00*; F16J *15/08*; F16L *17/00*
U.S. Cl. 277—34 **13 Claims**

1. An apparatus for sealing a vacuum or pressure system with a seal being established between a first object and a second object and around an opening that leads to the vacuum or pressure system, comprising:

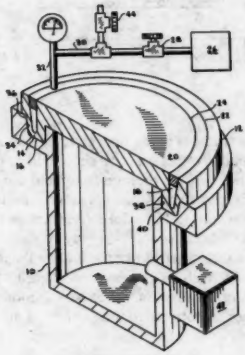
a flange attached to the first object so that a gas cannot pass between the flange and the first object, with part of the flange forming a metallic first sealing element;

a matching groove in the second object that substantially matches and mates with the flange, wherein the matching groove has a plurality of sides and wherein the sides are

joined in an air-tight manner, and with part of one side of the matching groove forming a second sealing element, with the matching groove shaped to provide a thin gap between the first sealing element and the groove and the second sealing element and the flange so that as the flange is inserted in an axial direction into the groove the first sealing element does not touch the groove and the second sealing element does not touch the flange, and wherein the flange and groove surround the opening when the flange is inserted in the groove;

a closed fluid tight chamber within the flange;

means for guiding the flange in the axial direction into the groove and preventing the first sealing element from touching the groove and the second sealing element from touching the flange as the flange is inserted into the groove;



means for directing fluid into the fluid-tight chamber for creating fluid pressure in the fluid-tight chamber after the flange is inserted in the matching groove to radially press at least a portion of the first sealing element against at least a portion of the second sealing element to form the seal around the opening and between the first and second sealing elements;

means for directing fluid out of the fluid-tight chamber; and

wherein the flange comprises in inner wall, an outer wall and a connecting wall, which form the sides of the fluid-tight chamber, and wherein at least part of one of these walls forms the first sealing element; and wherein the groove comprises an inner side, an outer side and a connecting side, and wherein at least part of one of these sides forms the second sealing element.

4,799,693

FACE SEALS WITH LIQUID PULSATION PUMPING FEATURE

David E. Johnston, Newcastle-upon-Tyne, United Kingdom, assignor to George Angus & Company Limited, Newcastle-upon-Tyne, England

PCT No. PCT/GB86/00491, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01170, PCT Pub. Date Feb. 26, 1987

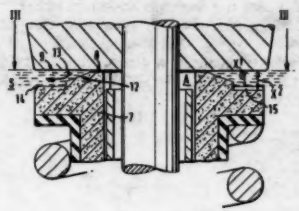
PCT Filed Aug. 18, 1986, Ser. No. 47,018

Claims priority, application United Kingdom, Aug. 20, 1985, 8520860

Int. Cl.[4] F16J *15/34*

U.S. Cl. 277—96.1 **3 Claims**

1. A face seal having a sealing ring with an axially-directed annular sealing face to bear, under axial spring load, by a circular sealing contact band against a circular counter-face of a sealed relatively rotatable member, in which a peripheral margin of the contact band is made of frusto-conical form, to diverge from the plane of the contact-band so as to define an annular sealing region which enlarges in circumferential area radially towards the sealed side of the seal, and the sealing ring is provided at the sealed side with peripheral shoulder which is designed to have nonconstant axial clearance from the counter-



face so that, on relative rotation, liquid pulsation is produced in the clearance to cause slight variation in the axial load of the sealing ring against the counter-face and consequent displacement pumping in the sealing region towards the sealed side.

4,799,694

PISTON RING AND METHOD OF MAKING THE SAME

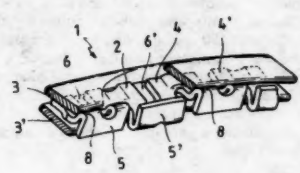
Bert Brauers, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 135,522

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1986, 3643243

Int. Cl.[4] F16J *9/20*; B23P *15/06*

U.S. Cl. 277—140 **2 Claims**



1. In a piston ring assembly having an expander spring of sheet material bent into an annular configuration, said expander spring having a circumferential series of radially oriented tongues; each tongue having an approximately axially bent leg; said tongues and legs being defined by stamped-out slots provided in said expander spring in an alternatingly radially inwardly and radially outwardly oriented circumferential series; said expander spring having stamping burrs bounding said slots; said piston ring assembly further having two laminar oil scraper rings arranged generally concentrically with respect to said expander spring; said laminar oil scraper rings being axially supported by said tongues and being radially supported by said legs; the improvement wherein said burrs are situated such that they are submitted solely to compression forces derived from bending stresses generated as a result of bending the spring into the annular configuration.

4,799,695
METALLIC GASKET

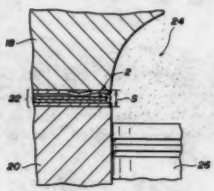
Nobuo Yoshino, Tokyo, Japan, assignor to Nihon Metal Gasket Kabushiki Kaisha, Saitama, Japan

Division of Ser. No. 827,837, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,142, Apr. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 493,174, May 10, 1983, abandoned. This application Oct. 29, 1987, Ser. No. 114,699

Claims priority, application Japan, May 17, 1982, 57-81530; May 17, 1982, 57-81531; Dec. 27, 1985, 60-292892; Dec. 27, 1985, 60-292893

Int. Cl.[4] F16J *15/08*

U.S. Cl. 277—231 8 Claims



1. A metallic gasket for creating a sealed engagement between the cylinder head and cylinder block of an internal combustion engine, comprising:

first, second and third elastic metal base plates disposed in overlying relationship with one another and being laminated together, said second base plate being interposed between said first and third base plates, and said base plates having a combustion chamber hole extending therethrough;

said first base plate having an annular bead formed therein and projecting axially thereof, said bead being spaced radially outwardly from said combustion chamber hole in concentric surrounding relationship thereto;

said second based plate being substantially flat and free of annular beads;

annular compensating means having a predetermined thickness and extending around said combustion chamber hole, said compensating means being disposed radially inwardly of said annular bead;

said annular compensating means including an inner annular edge part of one of said second and third base plates and being folded axially and radially outwardly through an angle of about 180°, said folded inner annular edge part defining said combustion chamber hole; and

said third base plate also being flat and free of annular beads, said folded annular edge part being defined on one of said second and third base plates and being folded around the inner annular edge part of the other of said second and third base plates.

4,799,696
CHUCK CLOSING MECHANISM FOR AUTOMATIC SCREW MACHINE

Charles F. Reed, Fairport, and Valery Parker, Pittsford, both of N.Y., assignors to Dover Industries, Inc., Hoffman Estates, Ill.

Filed Dec. 30, 1987, Ser. No. 139,787

Int. Cl.[4] B23B *31/20*

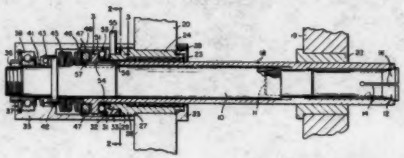
U.S. Cl. 279—50 9 Claims

1. In a chucking mechanism having an inner, collet supporting spindle mounted coaxially in the bore of an outer, tubular spindle for revolving therewith about a common spindle axis, and wherein one of said spindles is mounted for axial reciprocation relative to the other spindle selectively to open and close a collet that is supported against axial movement in the inner spindle, the improvement comprising

a movable camming member having thereon a camming surface surrounding said spindle axis and slidably engaged with a cooperating, stationary camming surface, said member being mounted for rotation about said spindle axis, and for limited axial movement relative thereto,

means for rotating said camming member to place its camming surface selectively into at least two different angular positions relative to said stationary camming surface,

resilient means interposed between said spindles and operative normally to urge said camming surface on said member into one of said two different angular positions, and at the same time resiliently to urge said one spindle axially to a first limit position in which said collet is in its closed position,



said camming surfaces being operative to shift said camming member axially from a first to a second limit position when said camming surface thereon is rotated from said one to the other of said two angular positions, and

means for transmitting the axial movement of said camming member to said one spindle thereby to shift said one spindle axially to its other limit position, and against the resistance of said resilient means, and thereby to place said collet in its open position, when said camming surface on said member is rotated to said other of its two angular positions.

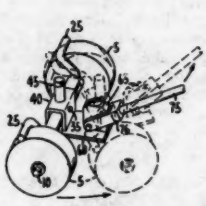
4,799,697
APPARATUS FOR MANUALLY MOVING LOADS

Calvin C. Williamson, and Joan Williamson, both of 1690 River Park Blvd., Napa, Calif. 94558

Continuation-in-part of Ser. No. 775,416, Sep. 12, 1985. This application Oct. 16, 1986, Ser. No. 919,655

Int. Cl.[4] B60K *9/00*

U.S. Cl. 280—3 14 Claims



1. Tow-hitch apparatus for manually moving trailers, vans and other mobile carriers intended for moving heavy loads along flat and inclined surfaces with substantially reduced power and increased maneuverability comprising:

a wheel assembly having a pair of spaced apart traction wheels each of which is mounted on opposite ends of a common axle,

a tubular housing arranged about and supporting said common axle,

a pair of control arm support means each independently mounted on a common fixed axis parallel to said common axle,

separate braking elements each comprising a control arm pivotally mounted on said fixed common axis and within each said control arm support means for restraining rota-

tion of each said wheel by frictional engagement when said control arm is pressed firmly thereagainst,

a relatively long lever handle attached to said apparatus through which a horizontal oscillating force can be applied,

and means for pivotally attaching said handle to said apparatus to enable said mobile carrier to move when said oscillating force is applied alternately to said lever handle so that the first of said wheels moves in a given direction about a radius the axis of which approximates the location of said second wheel until said first wheel reaches a desired point and said second wheel is then moved in said given direction about a radius the axis of which is approximately the location of said first wheel.

4,799,698

AUXILIARY SUPPORT FOR THE TRANSPORT OF CAR TRAILERS OR TRUCK TRAILERS

Zdravko Markovic, Liegnitzer Strasse 6, D-8058 Erding, Fed. Rep. of Germany

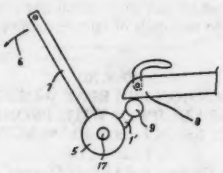
PCT No. PCT/EP86/00365, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO87/00132, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 24, 1986, Ser. No. 19,280

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1985, 3523716

Int. Cl.[4] B62B *1/08*

U.S. Cl. 280—46 **1 Claim**



1. An auxiliary wheeled support for the transport of automobile trailers or truck trailers comprising an axle, axle-supporting wheels mounted respectively on opposite ends of said axle, a drawbar connected to said axle for effecting hand-propelled movement of the wheeled support over the ground, hitch post means mounted on said axle between said wheels for engagement with the hitch of a trailer to be moved, outrigger wheeled stabilizing means located at the side of said axle opposite said drawbar, having only a single ground-engaging wheel which is mounted for swiveling about an upright axis and rigidly connected to said axle for preventing tilting of said axle about the axis of said axle, and means connecting said outrigger wheel stabilizing means to said axle for enabling the degree of spacing between said outrigger wheeled stabilizing means and said axle to be adjusted or for detaching said outrigger wheeled stabilizing means from the axle at will to enable said drawbar to be tilted for tilting said hitch post means into engagement with or disengagement from the trailer hitch.

4,799,699

DOLLY FRAME

Robert C. Berfield, Jersey Shore, and Craig A. Seasholtz, Avis, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed May 6, 1987, Ser. No. 47,202

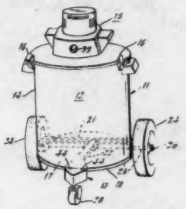
Int. Cl.[4] B62B *5/00*

U.S. Cl. 280—79.5 **19 Claims**

1. A dolly for movably supporting a tank having a curved side-wall, a closed bottom and a downwardly disposed bead on the side-wall at the bottom thereof, said dolly including:

a base, wheel means on said base for positioning the latter so that it is generally horizontal, arcuate groove means formed within the top surface of said base for receiving the downwardly disposed bead of said tank and fastening means for maintaining said downwardly disposed bead within said base thereby securing said tank to said base;

said base being constructed of synthetic elements connected in a generally T-shaped configuration;



a first of said elements constituting a crossarm and a second of said elements constituting a leg extending from one side of the crossarm at right angles thereto and generally at the center thereof;

said crossarm and said leg being engaged at an adjustable connection that permits limited movement therebetween in a direction longitudinally of said leg.

4,799,700

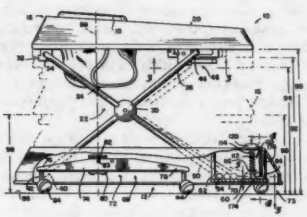
COLLAPSIBLE WALKER

Roy E. Knoedler, Boulder, Colo.; Kenneth P. Morton, East Aurora, N.Y., and Charles E. Schroer, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Oct. 8, 1987, Ser. No. 105,920

Int. Cl.[4] A47D *13/04*; B62B *7/06*

U.S. Cl. 280—87.051 **14 Claims**



1. A baby walker comprising

a base,

seat means for carrying a child,

frame means operably connecting the base and the seat means for permitting relative movement of the seat means and the base between a fully collapsed position and at least two elevated positions, the frame means including first and second leg members extending between the base and seat means and means for pivotably connecting the first and second leg members together in criss-cross relation to permit relative movement of the first and second leg members during movement of the seat means relative to the base, and

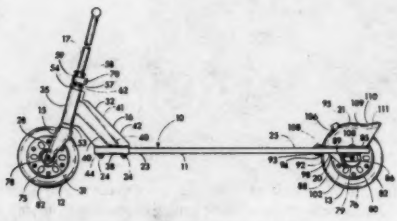
stop means coupled to the base for selectively engaging the first leg member during movement of the seat means form one of the at least two elevated positions toward the fully collapsed position to locate the seat means in the other of the at least two elevated positions to aid in preventing inadvertent movement of the seat means to its fully collapsed position.

4,799,701

SCOOTER

Mark S. Lindau, 3100 Lake Mendota Dr., #302, Madison, Wis. 53705, and Howard Clay, 2292 Foliage La., Rockford, Ill. 61109

Filed Jul. 6, 1987, Ser. No. 70,310
Int. Cl.[4] B62K 9/00
U.S. Cl. 280—87.041 22 Claims



1. An improved scooter comprising:

(a) a flexible platform which can support the weight of an operator, the platform including a front and a back, the back forming a longitudinal central slot;

(b) a fork including a stem and two prongs descending therefrom, each prong terminating at an end;

(c) a rearwheel which is mounted to the platform at the back thereof so as to be located within the slot for rotation;

(d) a front wheel which is mounted between the prong ends of the fork for rotation;

(e) a yoke which connects the fork and plaform together so that the fork and front wheel can be directionally pivoted by the operator in relation to the platform, the yoke including:

(i) a bracket comprised of a single metal sheet and including a substantially cylindrical housing with a seam portion, the fork stem being pivotally mounted within the housing to allow the stem to pivot freely within the housing; two approximately vertical panels which extend generally rearwardly, outwardly and downwardly from the housing to a horizontal bottom of each panel; and two supports which each extend horizontally inwardly from one of the panel bottoms to provide a surface on which the front of the platform is mounted; and

(ii) a plate member comprised of a single metal sheet and including a flat portion which extends substantially horizontally between the two panels spaced above the supports to overlie and connect to the front of the platform so that the platform is fastened between the flat portion and the bracket supports, the plate member being affixed to the two panels; and

(f) a steering column which is connected to the fork stem to allow the operator to steer the scooter.

4,799,702

SCOOTER WITH TURNABLE REAR WHEEL

Tarrassa Wang, No. 2, Lane 143, Hsueh Shih Rd., Taichung City, Taiwan

Filed May 11, 1988, Ser. No. 192,488
Int. Cl.[4] B62K 9/00
U.S. Cl. 280—87.041 4 Claims

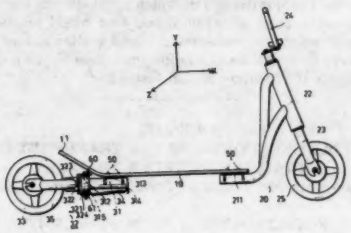
1. A scooter comprising:

a frame having a longitudinal foot board and a steering assembly including an upright handle extending in front of said foot board;

a front wheel operably connected to said steering assembly;

a rear wheel;

a flexible attachment means including a longitudinal horizontal rod fixedly secured to a bottom side of a rear portion of said foot board, said rod having a front end and a rear end, a joint member having a front portion pivotally connected to said rear end of said longitudinal horizontal rod for turning about a vertical axis, said front portion of said joint member having a restraining bar which is transverse to and attached securely to said front portion of said joint member, said restraining bar having two opposite ends both terminating at a point away from said front portion of said joint member, said joint member further



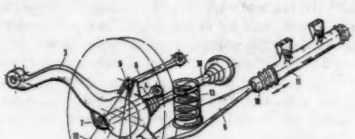
having a rear portion, a substantially U-shaped wheel carrying member for holding said rear wheel, said wheel carrying member having two arm members and an intermediate portion interconnecting said arm members, said intermediate portion being connected to said rear portion of said joint member, and a resilient means connected to said front end of said longitudinal horizontal rod and also connected to said ends of said restraining bar.

4,799,703

WHEEL SUSPENSION FOR REAR WHEELS OF MOTOR VEHICLES EQUIPPED WITH FRONT WHEEL STEERING, ESPECIALLY PASSENGER MOTOR VEHICLES

Rudolf Mueller, Dachau, and Ludwig Strasser, Ebersberg, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 3, 1988, Ser. No. 151,660
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703198
Int. Cl.[4] B60G 3/18, 11/14; B62D 7/14
U.S. Cl. 280—91 15 Claims



1. A wheel suspension for rear wheels of motor vehicles equipped with front wheel steering, comprising a wheel carrier means for each rear wheel which is operatively connected with a relatively fixed vehicle part by way of wheel guide means, of which at least three wheel guide means are constructed as cross guide means extending at least approximately in the vehicle transverse direction, joint means operatively connecting the cross guide means with the wheel carrier means, two joint means being located below the wheel center and the third joint means above the wheel center or two joint means being located above the wheel center and the third joint means below the wheel center, support spring means for each rear wheel supporting the vehicle body, the support spring means being supported on the side of the wheel at one of the cross guide means, wherein with an arrangement having two

lower cross guide means the rear cross guide means supports the support spring means and with an arrangement having two upper cross guide means the forward support cross guide means supports the support spring means, the supporting cross guide means being operatively connected at its inner end with a thrust rod means for the limited steering of the rear wheel, adjusting means operatively connected with the thrust rod means, and the supporting cross guide means being displaceable in the vehicle transverse direction by the adjusting means.

4,799,704

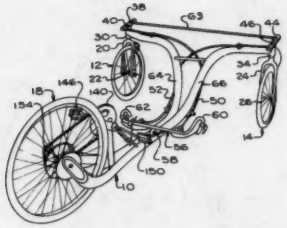
THREE-WHEELED CYCLE

Peter R. Colarusso, 4779 Lehto La., Lake Worth, Fla. 33463

Filed Apr. 16, 1987, Ser. No. 39,106

Int. Cl.[4] B62K *5/08*

U.S. Cl. 280—267 **16 Claims**



1. A three-wheeled cycle, comprising:

a frame;

first and second wheels, each rotatably mounted to the frame about substantially a horizontal axis and a vertical axis, said horizontal axis of rotation of said first and second wheels trailing behind the respective vertical axis of rotation, each of said first and second wheels being rotatably mounted about said horizontal axis to wheel mounting structure, the wheel mounting structure being substantially vertically mounted to the frame, and rotatable with respect to the frame about substantially a vertical axis;

a drive wheel rotatably mounted to the frame about a horizontal axis;

means for driving said drive wheel; and,

steering means for rotating at least one of said first and second wheels about their vertical axis.

4,799,705

TRAILER HITCHING AID

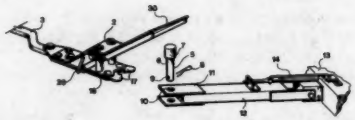
John B. Janes, R.R. No. 3, Lambeth, Ontario, Canada N0L 1S0, and Carson I. Anderson, R.R. No. 1, Muirkirk, Ontario, Canada N0L 1X0

Continuation of Ser. No. 808,467, Dec. 13, 1985, abandoned. This application May 15, 1987, Ser. No. 50,164

Claims priority, application Canada, Dec. 2, 1985, 496711

Int. Cl.[4] B60D *1/02*

U.S. Cl. 280—477 **1 Claim**



1. A trailer hitching aid for use between a tractor and a trailer, said tractor being of the type having a rearwardly projecting draw bar, and said trailer being of the type including a forwardly-projecting draw-tongue having upper and lower plate members each with a hole, the holes being substantially vertically aligned with each other, said hitching aid comprising:

a draw-pin having a shank portion for installation down into said holes and having a large bulbous head of diameter substantially greater than the diameter of said shank portion for resting against and protruding above said upper plate member when said shank portion is so installed; and

a hitch assembly for engaging the installed shank portion between said upper and lower plate members, said hitch assembly comprising:

a support member for attachment to said draw bar of said tractor;

a jaws member carried by said support member, said jaws member comprising two jaw elements pivoted about substantially vertical axes for movement towards and away from each other, for receiving said shank portion between said upper and lower plate members, and means for locking said jaws member to prevent release of said shank portion received;

an upwardly and rearwardly diverging channel member rigidly mounted on said support member, said channel member comprising a roof and two side walls and having a narrow throat end and a wider mouth end; said narrow throat end being only minimally larger than the diameter of said bulbous head of said draw-pin, said channel member being positioned with its narrow throat end proximate to said jaws member such that said jaws member receives said shank portion of said draw-pin between said upper and lower plate members as said bulbous head of said draw-pin passes through said narrow throat with the top of said bulbous head in contact with the underside of said roof of said channel member; said channel member includes a forward portion which is rigidly fastened to said draw bar, and an intermediate portion spaced above said jaws member; and

support means rigidly connected between said intermediate portion and said jaws member for rigidly maintaining said intermediate portion spaced above said jaws member.

4,799,706

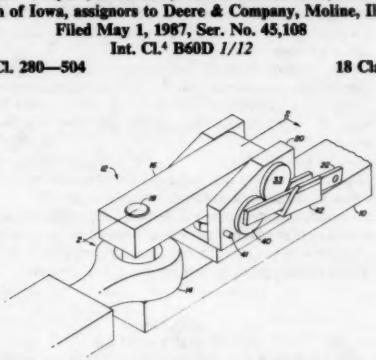
DRAWBAR COUPLER

Thomas W. Myers, Bettendorf, and Earl C. Jacobson, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 1, 1987, Ser. No. 45,108

Int. Cl.[4] B60D *1/12*

U.S. Cl. 280—504 **18 Claims**



1. A drawbar coupler for a work vehicle, comprising:

a drawbar mounted to the work vehicle;

a stud mounted on said drawbar;

a main bracket mounted to said drawbar between said stud and said work vehicle;

a strap pivotally coupled to said main bracket, said strap being pivotal between an engaged position in close proximity to an end portion of said stud and a disengaged position remote from said end portion; and

means for selectively locking said strap in said engaged and

disengaged positions, said locking means comprising a pin rotatably mounted in said main bracket and having a locking surface selectively engageable with corresponding surfaces on said strap to hold said strap in either of said engaged and disengaged positions and allowing said strap to pivot when said locking surface is disengaged from said corresponding surfaces.

4,799,707

GAS SUSPENSION SYSTEM FOR EASIER START-UP OF A COMPRESSOR

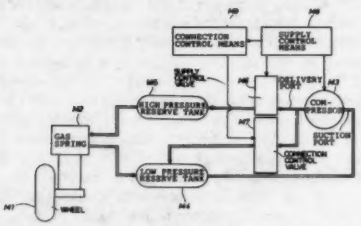
Shunichi Buma; Nobutaka Ohwa, both of Toyota; Osamu Takeda, Susono, and Toshio Aburaya, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 11, 1988, Ser. No. 179,767

Claims priority, application Japan, Apr. 14, 1987, 62-56323[U]

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—711 **6 Claims**



1. A gas suspension system comprising:

a gas spring (M2) provided for a wheel (M1) of a vehicle;

a high pressure reserve tank (M5) for holding gas to be supplied to the gas spring;

a low pressure reserve tank (M4) for receiving gas from the gas spring;

a compressor (M3) having a suction port and a delivery port for compressing the gas coming from the low pressure reserve tank via the suction port in order to supply high pressure gas to the high pressure reserve tank via the delivery port;

a supply control valve (M6) provided between the delivery port of the compressor and the high pressure reserve tank;

a connection control valve (M7) provided between the delivery port of the compressor and the low pressure reserve tank;

a supply control means (M8) for controlling the supply control valve to supply the gas compressed by the compressor to the high pressure reserve tank; and

a connection control means (M9) for controlling the connection control valve to connect the delivery port of the compressor with the low pressure reserve tank when the gas is not supplied by the supply control means.

4,799,708

OFF-ROAD VEHICLE

Akio Handa; Keiji Kasa; Eiji Hosoya, and Takerou Shibukawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1987, Ser. No. 113,861

Claims priority, application Japan, Oct. 27, 1986, 61-255055; Oct. 27, 1986, 61-255056; Oct. 27, 1986, 61-255058

Int. Cl.[4] B62D *21/00*

U.S. Cl. 280—796 **4 Claims**

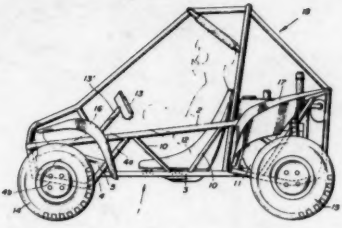
1. An off-road vehicle comprising:

a vehicle frame including a pair of laterally spaced main pipes extending substantially longitudinally of the vehicle over the entire length thereof, and a pair of laterally spaced seat side pipes extending substantially parallel to each other below the main pipes, respectively, each of said main pipes and seat side pipes including a front rod progressively diverging outwardly in a rearward direction;

a pair of front wheels rotatably supported on a front portion of said vehicle frame;

a pair of rear wheels rotatably supported on a rear portion of said vehicle frame;

a framework disposed on each lateral side of said vehicle frame and including upper and lower pipes inclined upwardly in a forward direction and substantially parallel to each other, said lower pipe having a front inclined rod inclined upwardly in the forward direction and a rising rod contiguous to the front inclined rod, the rising rod progressively diverging outwardly and inclined upwardly in a rearward direction, said upper pipe progressively diverging outwardly in the rearward direction and having a rear end joined to the rising rod;



a front wheel suspension mechanism comprising a knuckle arm supporting each of the front wheels, a V-shaped upper arm having a base pivotally mounted on an upper portion of said knuckle arm and front and rear ends pivotally attached to said upper pipe at front and rear positions thereon, and a V-shaped lower arm having a base pivotally mounted on a lower portion of said knuckle arm and front and rear ends pivotally attached to said lower pipe at front and rear positions thereon;

a tie rod for turning said front wheels in response to turning movement of a steering handle; and

the suspension mechanism being such that when said off-road vehicle is viewed in side elevation, the distances from a vertical line passing through a center of the axle of the front wheel to the pivotal front ends of said V-shaped upper and lower arms are smaller than the distances from the vertical line to the pivotal rear ends of the V-shaped upper and lower arms.

4,799,709

SAFETY HARNESS

Robert M. Francois, 3105 Cloudcrest Rd., La Crescenta, Calif. 91214

Filed Nov. 19, 1987, Ser. No. 122,710

Int. Cl.[4] B60R *22/00*

U.S. Cl. 280—801 **3 Claims**

1. In combination, an all-terrain vehicle and a safety harness releasably attached to said vehicle and the legs of the rider thereof, wherein the combination comprises:

an all-terrain vehicle having a body section whereby said rider sits thereon; and

a safety harness including a belly strap which is secured about said body section of said vehicle, and a pair of leg restraints removably attached to said belly strap;

wherein each of said leg restraints comprises:

an elongated leg strap having an upper free end for releasably attaching said leg strap to said belly strap;

removable attaching means disposed between said belly strap and said free end of said leg strap;

stirrup means formed at the opposite end of said leg strap to support the foot of said rider; and

a calf strap slidably mounted on said leg strap for attachment to the leg of said rider to secure said leg strap

against said leg of said rider, and wherein the length of said leg strap between said belly strap and said stirrup means prevents said leg of said rider from extending downwardly and contacting the ground surface.

4,799,710

SKI ATTACHMENT FOR PROTECTING THE UPPER SURFACE OF THE REAR PORTION OF A SKI

Thomas R. Barnett, 7 Mountsfield Drive, London, Ontario, Canada N6C 2S3

Filed Nov. 9, 1987, Ser. No. 118,583

Int. Cl.[4] A63C *11/00*

U.S. Cl. 280—809 **7 Claims**

1. A combination of a ski having an upper surface and a rear end and an attachment secured to the upper surface of the ski adjacent the rear end thereof, said attachment comprising a rigid body of hard impact resistant material having a base secured to the upper surface of said ski, said body being generally triangular in side view with a substantially flat rear face extending upwardly and forwardly from a rear base edge at an ange in the range of from 35° to 50° to the upper surface of the ski to a vertical height above the upper surface of the ski in the range of from 0.375 to 0.875 inches.

4,799,711

TOW BAR AND METHOD OF USE THEREOF

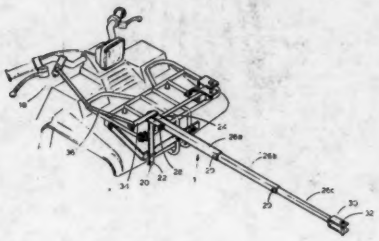
Dale C. Moore, Rte. 1, Box 63, Griggsville, Ill. 62340

Filed Dec. 11, 1987, Ser. No. 131,721

Int. Cl.[4] B62D *13/04*

U.S. Cl. 280—444 **18 Claims**

1. A tow bar mechanism suitable for towing a lightweight vehicle behind a towing vehicle, said tow bar mechanism comprising a mounting bracket assembly, a tow bar/tie rod assembly, and a steering mechanism attachment bracket; said mounting bracket assembly being installed on the front end of said towed vehicle; said tow bar/tie rod assembly being pivotally mounted in said mounting bracket assembly such that said tow bar may be engaged with said towing vehicle, said tow bar consisting of telescoping sections having relationship to each other such that when said tow bar is fully extended, it has a length sufficient to maintain desired separation between said towed vehicle and said towing vehicle and when it is fully telescoped, it may be conveniently rotated and stored on the towed vehicle thus permitting the towed vehicle to be operated without the necessity of removing the tow bar/tie rod assembly from the vehicle; and said steering mechanism attachment bracket being suitably mounted on the steering mechanism of said towed vehicle such that said bracket may receive the free end of the tie rod portion of said tow bar/tie rod assembly and permit positive steering of said towed vehicle such that the relationship between said towed vehicle and said towing vehicle will be maintained.



4,799,712

PRESCRIPTION SHEET AND MEDICATION DISTRIBUTION SYSTEM

Richard D. Biava, Gaithersburg, and Andrew J. Whelan, Germantown, both of Md., assignors to Physicians' Pharmaceutical Services, Inc., Rockville, Md.

Filed Nov. 18, 1986, Ser. No. 932,026

Int. Cl.[4] B41L *1/22*; B42D *15/00*

U.S. Cl. 282—1 A **13 Claims**

1. A unified prescription sheet and phamaceutical record system for authorizing distribution of a prescription drug to a patient, said prescription sheet comprising:

a backing sheet,

a cover sheet secured to said backing sheet, said cover sheet and said backing sheet including transfer means for transferring impressions made on said cover sheet to said backing sheet, and said cover sheet including preprinted regions for prompting entry of information required for dispensing of prescription drugs, one of said preprinted regions being a legend for prompting the signature of an individual authorized to prescribe prescription drugs, and

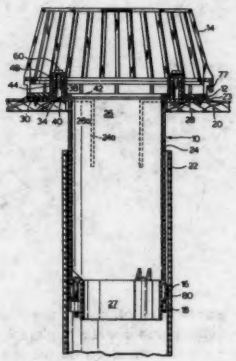
adhesive means for releasably securing at least a portion of said cover sheet to said backing sheet.

4,799,713

ROOF DRAIN COUPLING

Katharine A. Uglow, 72 Gibon Spring Dr., Rexdale, Ontario, Canada

Filed Feb. 18, 1988, Ser. No. 156,988
Claims priority, application Canada, Feb. 20, 1987, 530215
Int. Cl.[4] E04B 5/48
U.S. Cl. 285—42 10 Claims



9. A roof drain assembly comprising:

a drain insert member having a tube portion with flange means extending outwardly about an upper opening of the tube portion,

removable clamp ring means overlying the flange means,

post means on the flange means extending upwardly from an upper surface of the flange means,

socket forming means on the clamp ring means extending upwardly beyond an upper surface of the clamp ring means,

a socket recess in each socket forming means to receive one of the post means therein through an access opening to the socket recess in a lower surface of the clamp ring member,

screw means extending downwardly through the socket forming means into the socket recess to engage the post means and urge the clamping ring means downward into clamping engagement on top of the flange means.

4,799,714

SLEEVE TYPE CASING HEAD ADAPTER

James R. Collet, 315 Lynn Dr., Lafayette, La. 70508

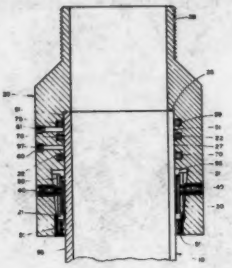
Continuation of Ser. No. 856,224, Apr. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 578,576, Feb. 9, 1984, abandoned. This application Sep. 28, 1987, Ser. No. 102,012
Int. Cl.[4] F16L 21/08
U.S. Cl. 285—145 5 Claims

1. A removable casing head adapter, comprising:

a substantially cylindrical body having a central opening extending the length thereof defined by an internal continuous wall, said wall comprising a shoulder for positioning the casing head adapter atop a casing, and wherein secured position of the casing head adapter is insured by a force exerted by weight of the casing head adapter resting atop of the casing;

wedging means positionable in a lower interior portion of the casing head adapter for frictional engagement with an exterior surface of the casing, said wedging means comprising a plurality of curved wedges positionable in an annular groove formed in the lower interior portion of the casing head adapter and adapted for a limited vertical slidable movement within said annular groove,

and wherein said wedges have upwardly extending teeth adapted to frictionally engage the exterior surface of the casing and to increase their frictional engagement if an



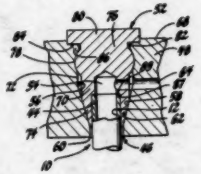
upwardly directed force attempts to disengage the casing head adapter from the casing.

4,799,715

HIGH PRESSURE TUBE ATTACHMENT MECHANISM

Carl E. Goubeaux, Troy, and Donald M. Flory, Arcanum, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 891,442, Jul. 28, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 75,928
Int. Cl.[4] F16L 5/00
U.S. Cl. 285—215 2 Claims



1. A high pressure tube attachment mechanism comprising:

a housing having an opening therein through which high pressure fluid may be conducted and fluid pressure transmitted;

a high pressure tube for conducting high pressure fluid therethrough and for transmitting fluid pressure therethrough, said tube having an inner cylindrical surface and an outer cylindrical surface respectively having an inner surface diameter and an outer surface diameter, said tube also having one open end positioned in said housing opening in fluid communication therewith so as to conduct high pressure fluid between said opening and the interior of said tube and to transmit fluid pressure between said opening and the interior of said tube;

and a securing device having means providing said fluid communication between said tube one open end and said housing, said securing device further having an axially extending tube-like first portion thereof received about said tube one end and within said opening in press fitted sealing relation to said tube one end and to said housing, an axially extending second portion extending inwardly of said housing opening, axially extending adjacent closed third and fourth portions having a reduced outer diameter area therebetween, said fourth portion defining the other end thereof axially opposite said first portion,

said housing opening having a first section defined by a right cylindrically formed wall surface and a second section extending from said first section, said second section hav-

ing a wall surface with at least a portion thereof conically tapered with about a two degree decreasing diameter taper, said second section terminating at the one outer end of said housing opening from which said tube extends when secured in place, the minimum wall surface diameter of said housing opening being greater than the outer surface diameter of said tube one end, said tube one end extending axially into said opening outer end and at least through a major portion of the conically tapered portion of said housing opening second section;

said securing device first and second portions each having an outer surface the maximum outer diameter of which is less than the diameter of said housing opening first section wall surface, said securing device third and fourth portions each having an outer surface the maximum outer diameter of which is greater than the diameter of said housing opening first section wall surface, said securing device further having a stepped inner diameter bore formed through said first portion and into said second portion in part of which said but one end is slidably received prior to final assembly of said attachment arrangement, said securing device first portion having an end extending toward said outer end of said housing opening and fitting into said tapered second section of said housing opening, said securing device having been axially pressed to extend into said housing opening with said securing device first and third portions being press fitted in said housing opening, said first portion having been pressed to extend into said housing opening tapered second section and by press fit tapered deformation be outwardly press fitted to said housing opening tapered second section and also be inwardly press fitted to said tube one end to a sufficient extent to sealingly secure said tube one end to said housing so as to hold fluid pressure on the order of 5,000 p.s.i. and to hold said tube securely in said housing opening against axial and rotational removal forces tending to remove said tube from said housing, said third portion having been pressed into said housing opening first section and sealing same and said fourth portion having been pressed into engagement with said housing at the other outer end of said housing opening and deforming parts of said housing into said reduced diameter area between said third and fourth securing device portions to stake said securing device, said securing device having a shoulder formed in said securing device stepped inner diameter bore and said tube one end having a transverse end surface in abutting engagement with said shoulder during and after the press fitting action to provide axial location of said tube one end relative to said securing device and said housing opening.

4,799,716

PROTECTOR FOR PIPE CONNECTOR HUBS

Harry F. Kujawa, and Nelson A. Hinderer, both of Houston, Tex., assignors to Oteco Equipment Company, Houston, Tex.

Filed May 15, 1987, Ser. No. 50,086
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—334.2 **3 Claims**

1. A protector for the inner ends of pipe connector hubs having seats in their bores which are conically shaped to receive conically shaped outer faces of lips on each end of a seal ring to be held between the hubs, and flanges having conically shaped outer ends adapted to be engaged by clamping means to draw their inner ends toward one another in order to cause the seats to be sealably engaged by the faces of the lips of the seal ring, said protector comprising

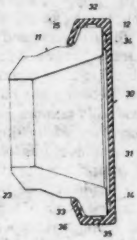
a cup shaped body of resilient material of relatively high heat resistance and having

a circular inner end wall disposable over the bore of the hub and across the inner end of the flange,

an annular side wall extending from the periphery of the end wall for disposal about the outer side of the flange, and

a conically shaped, annular outer end wall extending inwardly from the free end of the side wall for disposal over the full extent of the outer end of the flange of the hub,

said cup-shaped body having an inner face on each wall and being flexible about the intersection of its inner end wall and side wall to permit the inner periphery of its outer end wall to be spread to a position in which it may be moved over the outer side of the flange during assembly or disassembly of the protector, and whereby the inner periphery may be released during assembly, and when opposite the



outer end of the flange, to permit it to contract about the outer end of the flange in order to draw the outer end wall over the outer end of the flange, the side wall over the outer side of the flange and its end wall against the inner end of the flange, and

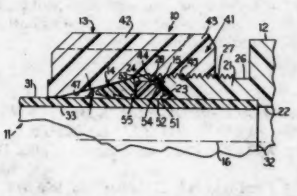
the body having means on the inner faces of its inner end wall, side wall and outer end wall which during welding of the outer end of the hub in a pipeline minimizes sticking of the inner faces to the flange.

4,799,717

TORQUE LOCK FITTING ARRANGEMENT

Kenji A. Kingsford, Devore, Calif., assignor to Mace Corporation, Upland, Calif.

Filed Sep. 2, 1987, Ser. No. 92,163
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—341 **8 Claims**



1. A fitting arrangement adapted to be sealingly joined to the end of a plastic tubing, the fitting arrangement including a plastic fitting having a flow passage therethrough, the fitting having a tubular portion through which said passage extends and which terminates in a bore for closely accommodating the free end of the plastic tubing, the tubular portion being externally threaded, the tubular portion adjacent the free end thereof being provided with an annular flared seat of frustoconical configuration which flares axially and radially outwardly from the end of the bore so as to terminate at the free end of the tubular portion, a one-piece wedge-shaped plastic ferrule disposed in snug surrounding relationship to the plastic tubing and having an exterior annular wedge surface which is of a frustoconical configuration and is adapted to wedgingly contact the flared seat on the tubular portion, the ferrule having an end face which is directed axially away from the fitting and which extends substantially perpendicularly relative to the axis of said plastic tubing, a one-piece plastic gripping sleeve

positioned in close surrounding relationship to the plastic tubing and having one axial end surface thereof adapted to abuttingly engage the axial end face of the ferrule, the gripping sleeve having a frustoconical exterior surface which extends axially away from said one end surface in converging relation relative to said plastic tubing, the gripping sleeve being radially deformable and having axially-spaced radially inwardly extending projections adapted to grippingly deform the elastic tubing to axially secure the gripping sleeve relative thereto, and an annular one-piece nut disposed in concentric surrounding relationship to the gripping sleeve but being rotatable relative thereto, the nut having an internally threaded first bore opening axially inwardly from one end thereof so that the nut can be externally telescoped over and threadedly engaged with the tubular portion to effect axial compression of the gripping sleeve and ferrule therebetween, the nut also having a tapered second bore which coaxially communicates with the threaded bore and extends therefrom axially through the other end of the nut, said second bore converging as it projects toward said other end of the nut, comprising the improvement wherein:

said frustoconical exterior surface on said gripping sleeve being defined by a first angle of inclination relative to the axis of said plastic tubing, said tapered second bore in said nut being defined by a second angle of inclination relative to said axis, said first angle of inclination being greater than said second angle of inclination so as to define a predetermined differential angle therebetween, said differential angle being in the range of about 4° to about 10°, and said one axial end surface of said gripping sleeve being sloped at a small angle relative to a plane perpendicular to the tubing axis as said one end surface projects radially outwardly, said one end surface being sloped axially toward said other end of said gripping sleeve as it projects radially outwardly, the small angle defining the slope of said one end surface being substantially equal to said differential angle, whereby said one end face on said ferrule and said one end surface on said gripping sleeve project radially outwardly in diverging relationship relative to one another when the gripping sleeve is in a radially nondeformed condition, said gripping sleeve being radially inwardly deformed so that the projections thereon grip the plastic tubing when the nut is threaded onto the externally threaded tubular portion and also being axially torsionally distorted due to said differential angle so that said one end surface of said gripping sleeve distorts and becomes flat so as to abut against the opposed end face of said ferrule.

4,799,718

SABOTAGE-PROOF LOCK DEVICE WITH ELBOW-SHAPED LATCHES

Kuo S. Ing, 7 Fl., No. 88, Jong-Yi Street, Shilin Dist., Taipei, Taiwan

Filed Aug. 13, 1986, Ser. No. 896,075
Int. Cl.⁴ E05C 5/02
U.S. Cl. 292—36 **1 Claim**

1. A lock device comprising:

a fastening board having at least one elbow-shaped recess formation for guiding a respective latch;

for each elbow-shaped recess formation, one L-shaped latch, said L-shaped latch having an inner side;

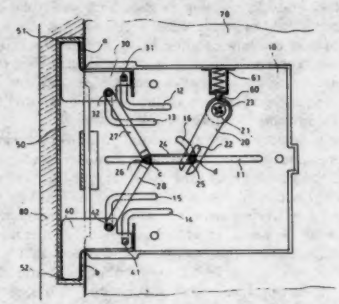
at least one pivot member positioned at the inner side of said L-shaped latch and in a respective elbow-shaped recess formation;

a transmission mechanism operatively connectable at said fastening board and accessible from the exterior of said fastening board to actuate said L-shaped latch to slide along its respective elbow-shaped recess formation; said transmission mechanism including:

a swing arm having a top end and a lower end, said lower end including a slot formation having a open end;

a shaft connected to said top end of said swing arm such that said top end is perpendicularly coupled to said shaft;

at least one linking arm pivotally connected to said L-shaped latch; and



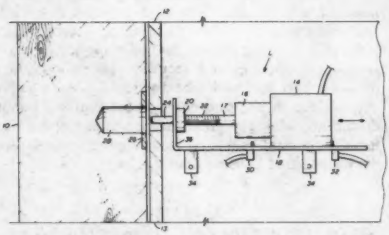
a linking rod, of which one end is pivotally connected to said linking arm, and the other end is pivotally engaged in said slot formation at the lower end of said swing arm.

4,799,719

MOTOR OPERATED LOCK

George Wood, 7539 Thurow, Houston, Tex. 77087

Filed Jun. 18, 1987, Ser. No. 64,340
Int. Cl.⁴ E05C 1/06
U.S. Cl. 292—144 **13 Claims**



1. An electrical lock for preventing relative movement between first and second closure members, comprising:

reversible electric motor having a rotatable shaft, for mounting on the first closure member;

bolt means adapted and positioned to move from the first closure member to the second closure member;

bolt engagement means for mounting on the second closure member for the bolt means to engage to lock the second closure member in place relative to the first closure member;

means for converting rotational motion of said shaft to translational motion, said converting means connected to said bolt means and said motor shaft, so that when said motor shaft rotates, said bolt means moves translationally; and

means for selectively activating said electric motor for selectively moving said bolt means into and out of engagement with said bolt engagement means for respectively locking and unlocking the closure members.

4,799,720

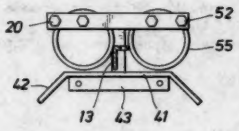
GRAVITY-OPERATED GATE LATCH APPARATUS

John P. Watson, 107 Mile Dr., College Station, Tex. 77840, and William P. Graff, 1809 Groesbeck, Bryan, Tex. 77803

Continuation of Ser. No. 768,237, Aug. 22, 1985, abandoned. This application Jun. 1, 1987, Ser. No. 58,596

Int. Cl.[4] E05C 21/02

U.S. Cl. 292—299 16 Claims



1. Latch apparatus for use in securing a gate or the like in a closed position, comprising: frame means including a pair of parallel, generally rectangular plate members; a pair of spacer members engaged between said plate members for holding said plate members a fixed distance apart, said spacer members each having a horizontal central axis, the said horizontal axes of said spacer members being located in the same horizontal plane; ring means pivotally carried on one of said spacer members, the other of said spacer members normally engaging the outer periphery of said ring means to provide a stop that prevents swinging movement of said ring means toward said other spacer member; latch bar means having a vertical dimension not substantially less than the mean radius dimension of said ring means; support means cooperable with said latch bar means for supporting the said latch bar means in said closed position, said support means having an upper surface that is located below the uppermost surface of said one spacer member a distance that is substantially equal to the mean diameter of said ring means; and means on said frame means for limiting movement of said latch bar means away from said ring means in said closed position.

4,799,721

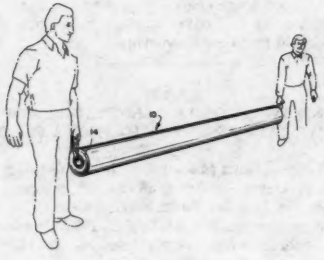
MEANS TO FACILITATE HANDLING OF CORE MEMBERS AND ROLLS OF MATERIAL

James L. Hale, Smyrna, Ga., assignor to Amoco Corporation, Chicago, Ill.

Filed Feb. 24, 1987, Ser. No. 18,202

Int. Cl.[4] B65G 7/12; B65H 75/40

U.S. Cl. 294—1.1 6 Claims



1. A roll of material having means to facilitate handling, said means comprising a core member having at least one material wound thereon and at least one strap-like element having a first section fixed to an axially extending outer end surface of the core member and said material overlies such fixed section whereby to further fix the element to the core member and a second section extending outwardly of the core member and free of said material whereby the element is adapted to receive a motive force to effect said handling.

4,799,722

APPARATUS FOR TRANSPORTING PERFORATED OBJECTS

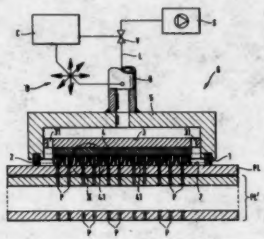
Francesco Marzinotto, Zurich, Switzerland, assignor to Ciba-Giegy AG, Basel, Switzerland

Filed Nov. 10, 1987, Ser. No. 118,935

Claims priority, application Switzerland, Nov. 10, 1986, 4480/86

Int. Cl.[4] B25J 15/06; B66C 1/02

U.S. Cl. 294—64.1 27 Claims



19. A gripper head used in a vacuum operated transport device for transporting perforated objects, comprising:

a base plate;

a plurality of side walls attached to said base plate to define a housing having a generally U-shaped cross-section;

a sealing device mounted in said housing and including a base and a plurality of naps which extend from said base, said naps being sized to penetrate into the perforations of said perforated object and effectively sell said perforations.

4,799,723

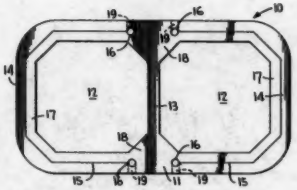
TWIN CUP CARRIER

John W. Mahaffy, Crystal Lake, Ill., assignor to The Continental Group, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 169,531, Jul. 17, 1980, abandoned. This application Jul. 10, 1984, Ser. No. 629,372

Int. Cl.[4] B65D 71/00

U.S. Cl. 294—87.2 14 Claims



1. A carton carrier for a pair of tapered cartons, said carton carrier comprising a thin sheet of flat flexible material, said sheet having a greater length than width dimension, a pair of like carton receiving openings in said sheet separated by a relatively narrow portion of a transverse bar, and at least one C-shaped carrier strap defined by a single generally C-shaped cut line in said sheet partially around a respective one of said carton receiving openings and terminating at opposite ends of said transverse bar, said carrier strap having ends also terminat-

ing at opposite ends of said transverse bar at the ends of said single C-shaped cut line, said strap ends each being directly integrally joined to said transverse bar and having a transverse hinge area extending generally parallel to said transverse bar.

4,799,724

GRIPPING DEVICE

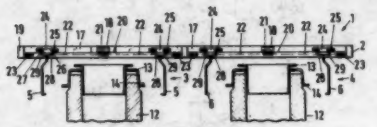
Karl Rekers, Spelle, Fed. Rep. of Germany, assignor to Firma Dipl.-Ing. Karl Rekers Maschinenbau, Spelle, Fed. Rep. of Germany

Filed Mar. 19, 1987, Ser. No. 27,772

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610130

Int. Cl.[4] B25J *15/10*; B66C *1/66*

U.S. Cl. 294—87.26 **12 Claims**



1. Gripping apparatus for gripping and supporting objects superimposed on the upper ends of upstanding pipes, comprising a support frame, a plurality of arm-support means mounted on said support frame, a plurality of gripping arm means, mounting means mounting each of said gripping arm means on said arm-support means for movement along said arm-support means, common drive means, and a plurality of resilient means operatively connecting each of said gripping arm means to said common drive means, said common drive means and said plurality of resilient means being operable to move said gripping arm means along said arm support means in a gripping direction toward said object to be gripped to engage said object, each of said resilient means being resiliently operable to permit each gripping arm means to move different distances in said gripping direction such that when the movement of one gripping arm means is arrested upon engagement with said object, other gripping means continue to move in said gripping direction until said other gripping arm means engage said object.

4,799,725

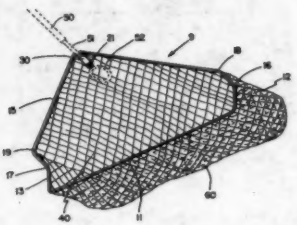
GOLF BALL RETRIEVER

Alf Anderson, Brooklyn Park, Minn., assignor to Surelab Superior Research Laboratories, Inc., St. Paul, Minn.

Filed Oct. 16, 1987, Ser. No. 113,252

Int. Cl.[4] A63B *47/02*

U.S. Cl. 294—19.2 **6 Claims**



1. A golf ball retrieving device for attachment to the shaft of a pole at a position spaced from an end thereof comprising a generally stiff frame defining an enclosed three-dimensional figure, the frame having a long straight horizontal side, two upright sides extending generally perpendicular from the horizontal side, and forming therewith a first plane, two converging sides extending from the upright sides and defining a second plane, the first and second planes intersecting each other at an obtuse included angle, attachment means carried by the frame for removably attaching the device to the shaft of a pole at a position spaced from its end, and a net attached to said frame for receiving and retaining golf balls.

4,799,726

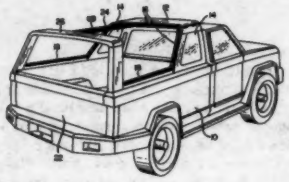
REMOVABLE CANOPY COVER

Gary M. Scott, Milwaukie, Oreg., assignor to Warn Industries, Inc., Milwaukie, Oreg.

Filed Mar. 21, 1988, Ser. No. 170,836

Int. Cl.[4] B60J *7/11*

U.S. Cl. 296—100 **8 Claims**



1. An open truck bed having a removable canopy thereon comprising;

a truck bed defining a load carrying area, said walls projected along the sides of said area extending from the front of said area to the rear of said area, a cap attached to the truck bed over the front of said area having rearwardly projected edge means configured substantially in the form of an inverted U, a rear hoop movably attached to the truck bed over the rear of said area and having forwardly projected edge means configured substantially in the form of an inverted U, a cover configured substantially of an inverted U and having a forwardly projected edge portion that is captured by the rearwardly projected edge means of the cap and a rearwardly projected edge that is captured by the forwardly projected edge means of the rear hoop, said side walls of the truck bed having upper edge means, said cover having lower edges that are respectively captured by the upper edge means of the side walls, said lower edges each standing the distance from the hoop to the cap, and sealing means engaging the captured edges of the cover and the respective edge means of the cap, hoop and side walls for enclosing the area of the truck bed, said cover being removable from capture by the respective edge means by rearward movement of the hoop to permit disengagement of the sealing means, and locking means locking said cover in place by locking the hoop against said rearward movement.

4,799,727

FOLDING AUTOMOBILE CONVERTIBLE TOP AND REAR WINDOW ASSEMBLY HAVING A FLEXIBLE HINGE

Mark R. Robbins, Santa Monica; Douglas W. Robbins, Malibu, and Roy P. Agosta, Southgate, all of Calif., assignors to Robbins Auto Top Co., Inc., Santa Monica, Calif.

Continuation of Ser. No. 781,145, Sep. 27, 1985, abandoned. This application Apr. 10, 1987, Ser. No. 37,114

Int. Cl.[4] E05D *1/02*

U.S. Cl. 296—107 **2 Claims**

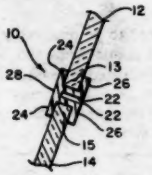
1. A folding automotive vehicle convertible top and rear window assembly, comprising:

a pair of substantially inflexible window panes;

an automotive vehicle convertible top including means for foldably supporting said window panes with a marginal edge of one of said panes disposed generally adjacent a marginal edge of the other of said panes, said convertible

top being movable between a folded stored position and an unfolded upright position;

an elongated one-piece hinge member of a flexible heat curable silicon-based resin elastomer material having a cross-section defining a pair of generally U-shaped channel strips each defined by an elongated base wall and a pair of generally parallel sidewalls upstanding from the opposite side margins of said base wall, said pair of channel strips forming a respective pair of elongated recessed seats for respective reception of and connection to the adjacent marginal edges of the pair of window panes, and a hinge segment extending between said channel strips as a common continuation of said sidewalls at one side of said channel strips and spacing said channel strips from each other, said sidewalls of each of said channel strips having a height generally equal to the width of said base wall of that channel strip, and said hinge segment having a size and shape to permit relative swinging movement of said channel strips through approximately 180° between unfolded and folded positions substantially without significant swinging movement beyond said unfolded and folded positions;



said hinge segment being of substantially equal thickness to said sidewalls and forming with the two sidewalls a substantially planar top surface; and

adhesive means for connecting said adjacent marginal edges of said panes to said channel strips within said seat, said adhesive means comprising an adhesive material for bonding the inboard faces of said base wall and said sidewalls of each of said channel strips to a respective one of the marginal edges of said panes;

said hinge segment having sufficient flexibility to accommodate relative swinging movement of said panes between said unfolded position with said seats of said channel strips opening generally in opposite directions when said top is in said unfolded upright position and said folded position with said seats opening generally in the same direction when said top is in said folded stored position, said hinge member substantially isolating stresses incurred during such swinging movement from the connection interfaces between said channel strips and said panes.

4,799,728

VEHICLE COVER

Cliff Akers, 336 Bangor Ave., San Jose, Calif. 95123, and Richard N. James, 4911 Kenson Dr., San Jose, Calif. 95124

Filed Feb. 8, 1988, Ser. No. 152,950
Int. Cl.[4] B60J *11/00*
U.S. Cl. 296—136 **2 Claims**

2. A cover for a vehicle body comprising:

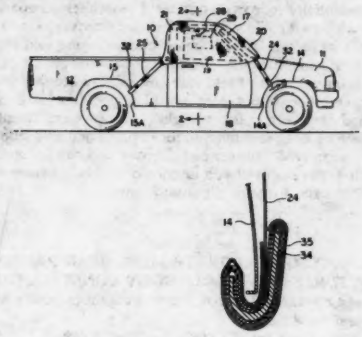
a hood formed to fit over at least a portion of said vehicle body;

at least one elongated strap for holding said hood on said vehicle body and having two ends;

means attaching a first end of said strap to said hood;

a semipliable member about which the second end can be wound with the number of windings being determined by the desired length of the strap; and

a sheath sized to fit over said pliable member and wound strap second end to prevent the second end from unwinding from said pliable member whereby the hood is fitted



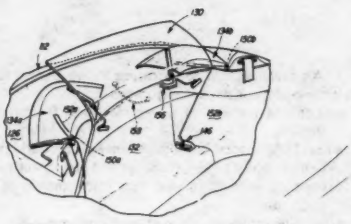
over the vehicle body and the srap extended to a vehicle edge and bent therearound.

4,799,729

TONNEAU COVER MECHANISM FOR CONVERTIBLE AUTOMOBILES

Peter P. Muscat, 14980 Waterfall Rd., Northville, Mich. 48167

Continuation-in-part of Ser. No. 720,349, May 13, 1985, Pat. No. 4,687,247. This application Aug. 14, 1987, Ser. No. 85,407
Int. Cl.[4] B60J *7/20*
U.S. Cl. 296—136 **5 Claims**



1. In a convertible top automobile including a body structure defining a passenger compartment, and also defining a generally U-shaped storage space to the rear of said passenger compartment said storage space having a main portion and a pair of side wells on either side thereof, a foldable top adapted to be collapsed into said storage space, an interior body panel located at the rear of said passenger compartment defining in part said main storage space, said automobile also including in combination therewith an improved tonneau cover mechanism comprising:

hinge means pivotally mounting said interior body panel to be tilted from a normal generally upright position forwardly away from said storage space; a main tonneau panel fixedly cantilevered from the upper side of said interior body panel to form an integral angled panel structure configured to overlie said storage space with said interior body panel in said upright position, said main tonneau panel carried forward as said body panel is tilted forward from said upright position to uncover said storage space;

a pair of substantially rigid side covers, each configured to overlie a respective side well;

means pivotally mounting each of said side covers to said body structure for rotation about an axis between a position overlying said respective side well and a position substantially inboard within said passenger compartment in which said side well portions are uncovered; and,

further including linkage means interengaging said integral angled panel structure and each of said side covers causing pivoting of each of said side covers between said overlying and inboard positions as said angled panel structure is tilted between said upright and forward positions, whereby both said main tonneau panel and said side covers are moved to cover and uncover said storage space by tilting movement of said interior body panel between said upright and forward tilted positions.

4,799,730

ARRANGEMENTS FOR FORMING REAR PARTIAL STRUCTURES OF VEHICLE BODY CONSTRUCTIONS

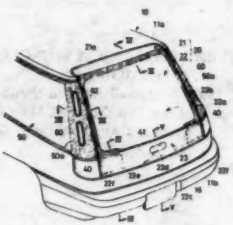
Hayatsugu Harasaki, Tsukimi, Japan, assignor to Mazda Motor Corporation, Japan

Filed Jul. 22, 1987, Ser. No. 76,400

Claims priority, application Japan, Jul. 31, 1986, 61-181009; Jul. 31, 1986, 61-181010

Int. Cl.[4] B62D *25/00*

U.S. Cl. 296—195 **12 Claims**



1. An arrangement for forming a rear partial structure of a vehicle body construction comprising,

a rear end portion of a vehicle body forming an opening therein,

a rear lamp assembly mounted on said rear end portion of the vehicle body so as to be disposed at a lower margin of said opening formed in said rear end portion of the vehicle body, and

a tailgate mounted on said rear end portion of the vehicle body to be operative to open and close said opening formed in said rear end portion of the vehicle body, said tailgate comprising a gate frame member which is attached through a hinge to said rear end portion of the vehicle body and a tailgate glass which is attached to said gate frame member and provided with an extended lower end portion incorporated therewith to extend outward beyond the lower edge of said gate frame member so as to cover therewith the outer surface of said rear lamp assembly when said tailgate is in a position for closing said opening formed in said rear end portion of the vehicle body.

4,799,731

STADIUM SEAT COVER

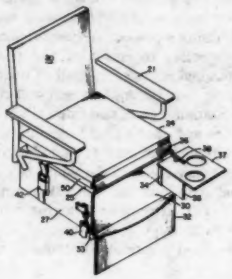
John T. Brown, Cincinnati, Ohio, assignor to Stadium Bags, Inc., Cincinnati, Ohio

Filed May 12, 1987, Ser. No. 48,887

Int. Cl.[4] A47C *7/62*

U.S. Cl. 297—192 **1 Claim**

1. A stadium seat cover comprising a member sized and shaped to slide over a seat portion of a stadium type chair, a pouch attached to the member slidable over said seat portion, a top side to said pouch, depending sides attached to said top side, a back side secured to said top side and said depending sides, a bottom side secured to said back side and said depending sides, a pair of elastic strips secured to each depending side,



a slide member adapted to be removably positioned between either of said pair of elastic strips and its depending side, a holder removably positioned to said slide member, a front cover flexibly secured at its lower edge to said bottom side, and a slidable fastener secured to the front edge of said depending sides and the top side.

4,799,732

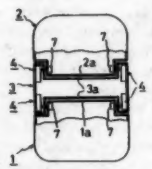
CHAIR SEAT INCLINING AND MOVING DEVICE

Kouichi Yamazaki, Yokohama, Japan, assignor to Okamura Corporation, Kanagawa, Japan

Filed Oct. 6, 1987, Ser. No. 105,558

Int. Cl.[4] A47C *3/00*

U.S. Cl. 297—300 **4 Claims**



1. A chair seat inclining and moving device comprising:

a seat plate provided with stepped engaging portions at the rear part thereof;

a reclining seat back providing stepped engaging portions at the lower part thereof;

a connecting plate curved upwardly with a gentle obtuse angle and the front part of which is gently directs upwardly, the front portion of the front part and the upper portion of the rear part of said connecting plate having stepped engaging portions which fitted with the stepped engaging portions of said seat plate and the reclining back seat, respectively;

connecting means for pivotally fitting opposing sides of said stepped engaging portions of said seat plate and the stepped engaging portions of said connecting plate with one another, said connecting means allowing said connecting plate to move upwardly; and

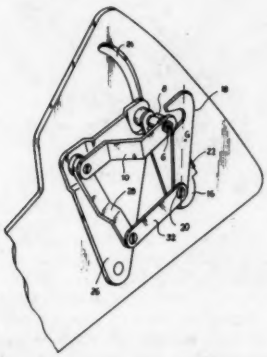
connecting means for pivotally fitting opposing sides of said stepped engaging portions of said connecting plate and said stepped engaging portions of said reclining back seat with one another, said connecting means allowing said reclining back seat to move forwardly.

4,799,733

SEAT STRUCTURE HAVING A PIVOTABLE BACKREST AND IN PARTICULAR A FRONT SEAT STRUCTURE OF A MOTOR VEHICLE

Serce Beley, Seloncourt, and Francois Fourrey, Montbeliard, both of France, assignors to Cycles Peugeot, France

Filed Aug. 28, 1986, Ser. No. 901,227
Claims priority, application France, Apr. 29, 1986, 86 06193
Int. Cl.[4] B60N 1/02
U.S. Cl. 297—379 6 Claims



1. A seat structure for a vehicle or the like, comprising a pivotable backrest having a frame (2) and a seat cushion having a frame (1) and, disposed on each side of the seat structure, a support side wall (14), a pivot pin (12) mounted on the side wall;

means for adjustably supporting the cushion frame (1) on the side wall (14) and comprising a pivotal member (26) pivotally mounted on said pivot pin (12), and a first pin (4) having a longitudinal axis and mounted on the pivotal member (26) at a distance from said pivot pin (12) whereby the first pin (4) is movable by the pivotal member (26) upwardly and forwardly about said pivot pin (12) in a first arc of a circle centered on said pivot pin (12) whereby the first pin and the cushion frame (1) are adjustable in height by pivoting the pivotal member (26) about said pivot pin (12);

means for permitting the backrest frame (2) to move forwardly in translation when swinging the backrest frame forwardly relative to the cushion frame (1) and comprising a link (10) having a first end pivotally mounted on said pivot pin (12) and a second end, and a second pin (6) pivotally connecting the backrest frame (2) to said second end of the link, said second pin (6) being movable upwardly and forwardly along a second arc of a circle identical to said first arc of a circle about said pivot pin (12) independently of the cushion frame (1) from a first position located at the rear of the pivot pin (12) relative to the forward pivoting of the backrest frame (2), which the second pin (6) occupies in the non-swung over position of the backrest frame (2);

means for providing an abutment for the second pin in a position of axial alignment with the first pin in a normal non-swung over position of the backrest frame and comprising a substantially semi-cylindrical semi-bearing fixed to the first pin and axially extending beyond the first pin (4) for receiving the second pin (6) while allowing the second pin (6) to freely move out of the semi-bearing (8) when the second pin is moved along said second arc of a circle away from the first pin;

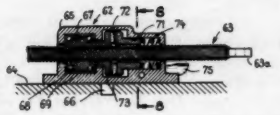
and means for preventing the second pin from leaving the semi-bearing when it is required to maintain the first pin and second pin in axial alignment with each other and comprising a hook (18) and means for pivotally mounting the hook on the pivotal member (26) in such manner that the hook is pivotable selectively to a hooking position for hooking onto and locking the second pin (6) and preventing it from leaving the semi-bearing (8), and a retracted unlocking position allowing the second pin (6) to leave the semi-bearing.

4,799,734

LINEAR DEVICE FOR RAPIDLY ADJUSTING AND IMMOBILIZING A MOVABLE PART RELATIVE TO A FIXED PART

Pierre Périou, Cergy Pontoise, France, assignor to Rockwell-CIM, France

Filed Oct. 13, 1987, Ser. No. 107,605
Claims priority, application France, Oct. 13, 1986, 86 14178
Int. Cl.[4] B60N 1/02, 1/08; F16H 25/20
U.S. Cl. 297—361 6 Claims



1. A linear device for the rapid adjustment and immobilization of a movable part relative to a fixed part, said device comprising:

at least one pair of elements consisting of a nut and a screw which are screw threadedly interengaged and cooperative with said fixed and movable parts;

said nut and screw having screw threads which have a helix angle large enough to ensure that the movement in translation is converted into movement in rotation with a slightly positive efficiency;

a housing for connection to said fixed part; said screw being movable in translation relative to said housing and provided for connection to said movable part, and extending through the nut which is located in said housing and fixed in translation and guided in rotation by said housing;

means for locking the nut relative to said housing;

said means for locking the nut comprising a set of teeth on the nut, a locking member, which is axially movably mounted in the housing coaxially around said screw and which is provided with a set of teeth which is complementary to said set of teeth on the nut for the purpose of locking the nut against rotation;

an elastically yieldable element inside the housing associated with said locking member for constantly biasing it to its locking position;

and means for retracting the locking member from the nut.

4,799,735

CHAIR OR ARMCHAIR

Just B. Meyer, Rhenen, Netherlands, assignor to Kembo B.V., Netherlands

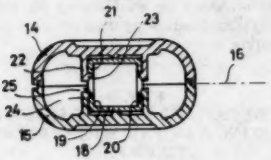
Filed May 15, 1987, Ser. No. 50,244
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3622028
Int. Cl.[4] A47C 7/00
U.S. Cl. 297—440 16 Claims

1. A chair or armchair including:

a seat (3) and a backrest (4) integral with said seat to constitute a cask, a plurality of hollow plastic legs (9, 10) extending below said seat to maintain the latter in a raised generally horizontal position, and metal tubes (17, 18) disposed within said legs to stiffen same;

each of said legs comprising first and second plastic halves (14, 15, 11, 12) which have a joining face (16, 13) extending generally parallel to a side of said chair;

said plastic halves including inward projecting portions (22, 24) having snap-in edge formations (23, 25) which interact



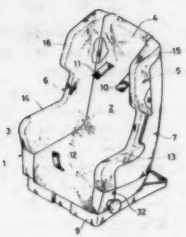
with snap-in orifices (21) in the metal tubes (17, 18) for holding the latter and said plastic halves (14, 15, 11, 12) together as a unit.

4,799,736

CHILD'S SAFETY SEAT FOR USE IN AUTOMOBILES

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Continuation of Ser. No. 932,684, Nov. 18, 1986, abandoned.
This application Dec. 22, 1987, Ser. No. 136,491
Claims priority, application Japan, Nov. 29, 1985, 60-269894
Int. Cl.[4] A47C 7/00
U.S. Cl. 297—440 5 Claims



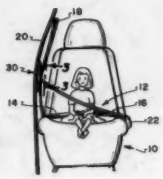
1. A child's safety seat for use in automobiles, comprising a chair type safety seat body made by a resin molding and having a seat portion, a backrest portion, and a pair of lateral wall portions rising upwardly and forwardly respectively from said seat portion and from said backrest portion, each of said lateral wall portions comprising an initially downwardly and rearwardly open channel forming an edge section of the respective lateral wall portion, said initially downwardly and rearwardly open channel having a contour with a U-shaped cross-section extending substantially continuously along said seat portion and along said backrest portion, said U-shaped cross-section having a first leg merging into the respective lateral wall portion and a second leg forming a downwardly and rearwardly directed free edge, initially separate outer lateral wall attachment panels made by a resin molding separately from said safety seat body, each of said initially separate attachment panels having an approximately forwardly facing rim contoured to match said contour of said initially open channel of the respective lateral wall portion, so that said second leg and said initially separate panels together form an outer chair surface extending substantially uninterrupted from said free edge to rear ends of said lateral wall portions, so that an outwardly facing surface of said second leg extends substantially in a same plane as an outwardly facing surface of the respective initially separate panel, and means for securing said initially separate outer lateral wall attachment panels to said safety seat body in such a position that said forwardly facing contoured rims of said initially separate attachment panels fit with the respective free edge of said second leg of said U-shaped cross-section of the respective lateral wall portion in said seat body to provide a substantially uninterrupted outer chair surface which substantially completely closes said initially open channel of said U-shaped cross-section.

4,799,737

SHOULDER BELT ADJUSTER

Marc B. Greene, 73 Market St., Venice, Calif. 90291

Filed Mar. 16, 1987, Ser. No. 26,105
Int. Cl.[4] B60R 22/10, 22/24
U.S. Cl. 297—468 3 Claims



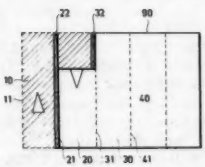
1. In a shoulder belt adjuster for a vehicle seat restraint system consisting of a shoulder belt having an outboard, upper point of attachment and an inboard, lower point of attachment and a lap belt cooperative with said shoulder belt, the combination of: rigid track means secured to an interior wall of said vehicle and having a plurality of vertically spaced turnkeys mounted thereupon; and a yoke member engageable with said shoulder belt between said upper and lower attachment points, said yoke member having openings therein for receiving said turnkeys whereby said yoke member can be removed from operative engagement with said turnkeys and engaged with others thereof to vertically adjust said yoke member and, thus, the intermediate portion of said shoulder belt.

4,799,738

MINING METHOD FOR WORKING LARGE-SCALE MINERAL DEPOSITS BY THE CAVING SYSTEM

András Solymos; Károly Barsi, both of Tatabánya, Hungary; László Kis-Tamás, Sandal Wakefield, United Kingdom; István Forisek, Tatabánya, Hungary; László Dörömbözi, Tatabánya, Hungary, and Ottó Lakonits, Tatabánya, Hungary, assignors to Tatabányai Szénbányák, Tatabánya, Hungary

Filed Nov. 1, 1982, Ser. No. 438,193
Claims priority, application Hungary, Nov. 3, 1981, 3276/81
Int. Cl.[4] E21C 41/00
U.S. Cl. 299—11 7 Claims



1. A mining method for the underground extraction of large mineral deposits, comprising:

(a) forming a subsidiary road perpendicularly to the work face from which the mineral deposit is to be removed;

(b) forming a boundary road substantially perpendicular to said subsidiary road;

(c) forming a first mine tunnel by removing the mineral deposit from said work face, along said subsidiary road until said boundary road;

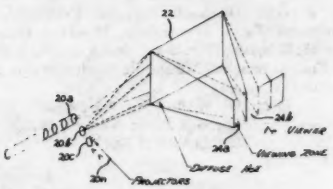
(d) collapsing the material around said first mine tunnel to fill the same along said subsidiary road;
(e) consolidating the collapsed matter along said subsidiary road; and
(f) forming a second mine tunnel along said subsidiary road.

4,799,739

REAL TIME AUTOSTEREOSCOPIC DISPLAYS USING HOLOGRAPHIC DIFFUSERS

Craig Newswanger, Sylmar, Calif., assignor to Advanced Dimensional Displays, Inc., Van Nuys, Calif.

Filed Aug. 10, 1987, Ser. No. 84,326
Int. Cl.[4] G02B *5/32, 27/22*
U.S. Cl. 350—3.7 **17 Claims**



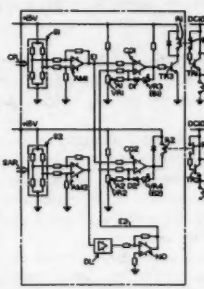
1. An autostereoscopic display comprising
a holographic diffuser means for directing light incident thereto from a point source toward and substantially only toward a viewing zone in a diffuse pattern, and
means for projecting a plurality of images onto said holographic diffuser means so as to overlie each other on said holographic diffuser means, each image being projected from a somewhat different direction selected so that the viewing zones of said plurality of images are each substantially contiguous to the viewing zones of adjacent images along the adjacent edges thereof.

4,799,740

ELECTROPNEUMATIC MASTER CONTROLLER FOR AN AIR BRAKE SYSTEM

Akihiro Iwaizako; Hiroshi Nishii, and Seiki Maruta, all of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Dec. 15, 1987, Ser. No. 132,291
Claims priority, application Japan, Dec. 26, 1986, 61-314772
Int. Cl.[4] B60T *13/70, 13/68, 15/14*
U.S. Cl. 303—15 **10 Claims**



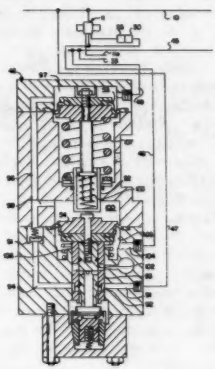
1. An electropneumatic master controller for a brake system of a railway vehicle comprising, a first sensor for converting the air pressure in a control line into a first equivalent electrical signal, the control line being pressurized by the braking operation of a brake valve and being exhausted by the releasing operation of the brake valve, a second sensor for converting the air pressure in a straight air line into a second equivalent electrical signal, the straight air line being pressurized by closing a release solenoid valve and by opening a brake solenoid valve and being exhausted by closing the brake solenoid valve and by opening the release solenoid valve, a delay circuit means receiving the second equivalent electrical signal from the second sensor and after a certain time delay producing an output representative of the second equivalent electrical signal, a first comparator means comparing the difference between the first equivalent electrical signal and the second equivalent electrical signal with a first set point for opening the release solenoid valve when the difference is less than the first set point and for closing the release solenoid valve when the difference is larger than the first set point, and a second comparator means comprising the difference with a second set point which is larger than the first set point for closing the brake solenoid valve when the difference is less than the second set point and for opening the brake solenoid valve when the difference is larger than the second set point.

4,799,741

PARKING BRAKE SYSTEM FOR RAILWAY VEHICLES

Thomas H. Eagle, Clayton, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 932,418, Nov. 19, 1986, Pat. No. 4,746,171.
This application Mar. 4, 1988, Ser. No. 164,033
Int. Cl.[4] B60T *17/04*
U.S. Cl. 303—60 **4 Claims**



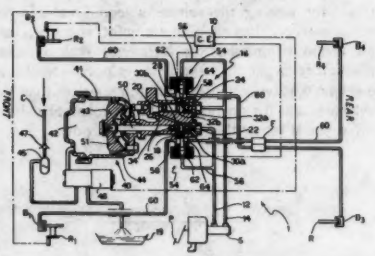
1. A protective device for charging a handbrake release pipe from a brake pipe comprising;
(a) brake pipe, auxiliary reservoir and handbrake release pipe ports,
(b) cut-off, charging and exhaust pistons,
(c) a charging passage extending from the brake pipe port to the handbrake pipe port including a charging check valve and a chamber at one side of the cut-off piston,
(d) the charging passage also being connected to a chamber above the exhaust piston and below the charging piston, and
(e) graduating spring means biasing the respective pistons in opposition to fluid pressure in the chambers adjoining the respecting pistons.

4,799,742

FLUID PRESSURE DEVICE FOR OPERATING THE BRAKE MEMBERS OF A VEHICLE WITH A WHEEL ANTI-LOCKING FUNCTION

Pierluigi May, Milan, and Virginio Maggioni, Rosta, both of Italy, assignors to Industire Magneti Marelli S.r.l., Milan, Italy

Filed Apr. 13, 1988, Ser. No. 180,869
Claims priority, application Italy, Apr. 14, 1987, 67308 A/87
Int. Cl.[4] B60T 8/02
U.S. Cl. 303—115 4 Claims



1. A device for the selective application to groups of brake members associated with the wheels of a vehicle of a fluid operating pressure generated by a source, wherein it comprises:

a fluid distributor member with a first chamber and a second chamber, each of which carries, for its connection to the source, an associated respective one-way flow valve which is adapted to prevent the propagation of fluid pressure from the source to the respective chamber, a piston being sealingly slidable in each chamber and dividing the chamber itself into a first space communicating with the one-way flow valve associated with respective chamber and a second space, the first space of the first chamber communicating with the second space of the second chamber; each piston carrying associated actuator means adapted to keep the one-way flow valve associated with the respective chamber in its open condition when the piston itself is in a position of advancement towards the first space of the respective chamber,

actuator means selectively operable to apply to the piston mounted in the first chamber a thrusting force directed so as to move the piston itself into a position of advancement towards the first space of the first chamber itself,

for each of the first and second chambers and for each group of brake members, a respective valve member with a first intake duct being connected to a source of pressurised operating fluid, a second intake duct communicating with the first space in the respective chamber, and at least one further duct communicating with the brake members of the group; the valve member including first obturator means interposed in the first intake duct and being normally open and second obturator means interposed in the second intake duct and being normally closed,

a braking control circuit with sensor means which detect the tendency of the wheels associated with the brake members of the group to lock, and which is adapted to, upon a manifestation of the tendency to lock, control in a selectively predetermined sequence:

the de-activation of the actuator means, with the cutting off of the thrusting force,

the closure of the first obturator means fo he respective valve member, and

the opening of the second obturator means of the respective valve member,

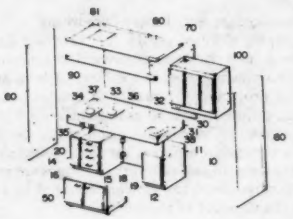
and wherein the actuator means include a fluid pressure actuator with a cylinder and a piston, in which the piston is operatively connected to the piston mounted in the first chamber of the fluid distributor member and divides the cylinder into two spaces of which the first is connected to a pressurised fluid source and the second contains a resilient biassing member which acts on the piston in the opposite sense from the thrust of the pressurised fluid, and a three-way solenoid valve member for controlling communication between the first chamber of the actuator and the pressurised fluid source in one condition and between the first chamber and a discharge in another condition, the solenoid valve member being piloted by the braking control circuit.

4,799,743

KITCHEN UNIT FOR PHYSICALLY HANDICAPPED PERSONS

Nobuaki Kikuchi, Hirakata; Hirohisa Fukuyama, Fukaeminamimachi; Tamio Hirabayashi, Hirakata, and Kouichi Imai, 8-15, Shimeien, Ibaraki-shi, Osaka, all of Japan, assignors to Kouichi Imai and Matsushita Electric Works, Limited, both of Osaka, Japan

Filed May 1, 1987, Ser. No. 44,620
Claims priority, application Japan, Nov. 10, 1986, 61-267148
Int. Cl.[4] A47B 77/06
U.S. Cl. 312—228 1 Claim



1. A kitchen unit comprising:

a pair of base cabinets for fixedly mounting on the floor of a room;

a countertop extending horizontally across the top of the base cabinets and having mounted therein, adjacent one of its ends, a sink and, adjacent its other end, at least two surface cooking elements with a cooking workspace on said countertop therebetween;

said base cabinets being arranged in laterally spaced relation and defining therebetween a frontally accessible wheelchair space below said countertop and said cooking workspace thereon,

said wheelchair space having its bottom opened to the floor so as to permit entry therein of a wheelchair and the use of the kitchen unit by a physically handicapped person in the wheelchair,

said cooking elements being mounted in said countertop in a staggered relation with the surface cooking element located closest to the cooking workspace displaced rearward of the countertop and the surface cooking element located remotest from the workspace displaced forward of the countertop, and

an auxiliary cabinet removably received in said wheelchair space for use of the kitchen system by non-handicapped persons, sad auxiliary cabinet being an L-shaped structure with a bottom plate and a front door frame upstanding from the front edge of the bottom plate, said bottom plate being provided with a set of rollers for rolling movement of the auxiliary cabinet on the floor into and out of said wheelchair space, and said front door frame being provided with a pair of hinged doors for closing the front of the wheel chair space and for providing access to the

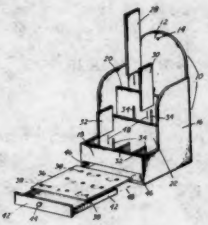
interior thereof when the auxiliary cabinet is selected in use to occupy the wheelchair opening.

4,799,744

COOK'S CADDY

Sylvia S. Toy, P.O. Box 1125, Paradise, Calif. 95967

Filed Dec. 24, 1987, Ser. No. 137,873
Int. Cl.[4] A47B 77/06
U.S. Cl. 312—229 3 Claims



1. A multiple kitchen utensil holding caddy comprising:

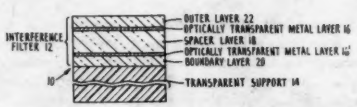
a substantially rectangular container structured for vertical positioning, upwardly arranged with an opened top, downwardly arranged terminally with a flat bottom, there being corner positioned supporting leg pads affixed externally under said flat bottom with said container compartmented for depository housing of kitchen utensils, there being an elongated, rectangular back section with a semicircular top edge containing a downwardly angled wall-hang aperture positioned centrally adjacent said top edge and said back section affixed with side walls extending upward from said bottom to the horizontal diametrical apex of said semicircle of said back section with said side walls having quarter rounded upwardly positioned frontal corners, there being two stepped down dividers paralleling said back wall between said side walls, the highest of said dividers nearest said back wall and the lowest of said dividers being a partial frontal wall section for said side walls, there being a box-like frontal extension of said side walls affixed with a shortened front member sufficiently sized to form a third step down divider in the back wall paralleling divider design, there being removable partitions sized for height and width fitting between said divider walls forming said compartments and said shortened front member accommodating a pull-out drip tray housed paralleling said bottom under downwardly terminal ends of said back wall paralleling dividers and said removable partitions, there being a drip pan member multi-apertured with funneling features slidably affixed immediately above said pull-out drip tray.

4,799,745

HEAT REFLECTING COMPOSITE FILMS AND GLAZING PRODUCTS CONTAINING THE SAME

Stephen F. Meyer, Los Altos, and Thomas G. Hood, San Francisco, both of Calif., assignors to Southwall Technologies, Inc., Palo Alto, Calif.

Filed Jun. 30, 1986, Ser. No. 880,797
Int. Cl.[4] G02B 5/28; C23C 4/00
U.S. Cl. 350—1.7 25 Claims



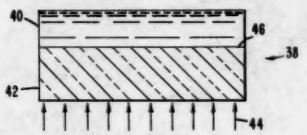
1. In a transparent, infrared reflecting composite film including a transparent metal layer-dielectric layer filter adhered to one side of a transparent support, the improvement comprising employing as the transparent metal layer-dielectric layer filter a visible light-transmitting infrared-reflecting Fabry-Perot interference filter which includes at least two separate discrete continuous sputter-deposited transparent metal layers separated from one another by a discrete continuous spacer layer of sputter-deposited inorganic metal oxide, compound or salt dielectric wherein each transparent metal layer is contiguous with and directly adherent to the adjacent spacer layer of dielectric without an intervening nucleation layer.

4,799,746

EFFICIENT HOLOGRAMS AND METHOD FOR MAKING SAME

John E. Wreede, Monrovia, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 27, 1985, Ser. No. 706,059
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] G03H 1/02
U.S. Cl. 350—3.6 11 Claims



1. Method for making slant fringe holograms having increased efficiency comprising:

applying a single layer of light sensitive holographic recording medium to a single surface of a substrate;

treating said layer to reduce light sensitivity at only surface regions thereof adjacent said single surface of said substrate, said treating comprising exposing the medium to highly absorbed incoherent light; and

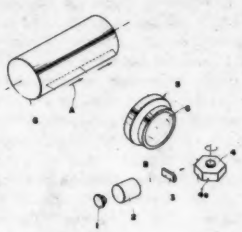
exposing the recording medium to coherent light to record a slant fringe pattern therein.

4,799,747

TILT ERROR CORRECTIVE SCANNING OPTICAL SYSTEM

Kazuo Yamakawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1987, Ser. No. 88,047
Claims priority, application Japan, Aug. 21, 1986, 61-196208
Int. Cl.[4] G02B 26/10
U.S. Cl. 350—6.8 6 Claims



1. A tilt error corrective scanning optical system for a system having a image projection optical device for deflecting and reflecting a light beam, comprising:

a linear image forming optical device for causing a light beam emitted from a light source to form a linear image on the surface of the deflection device; and

an image projection optical device for causing the deflected beam of the linear image to form a restored image on an objective surface while maintaining constant beam scanning speed, the image projection optical device consisting of a single toric lens having toric surfaces on the both sides thereof, the first toric surface faced to the deflection device being concave in both directions parallel and perpendicular to the scanning plane, the second toric surface opposite to the first toric surface being convex in both directions parallel and perpendicular to the scanning plane and the lens fulfilling following conditions:

$$r_1/r_2 \leq 1 \quad (I)$$

$$0.3 < d_1/f < 0.5 \quad (II)$$

wherein r_1, and r_2, are radii of curvature of the first and second toric surfaces, respectively, in the direction perpendicular to the scanning plane, d_1 is an axial distance between the first and second toric surfaces and f is the total focal length of the toric lens in the direction parallel to the scanning plane.

4,799,748

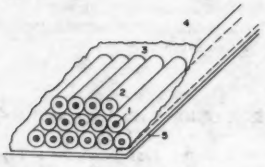
SLAB-DIFFUSER FIBER INCIDENT ENERGY CONCENTRATOR

David C. Brown, 4751 State Rte. 34, Winfield, W. Va. 25213

Continuation-in-part of Ser. No. 826,304, Feb. 5, 1986, Pat. No. 4,733,929. This application Apr. 7, 1986, Ser. No. 849,055

Int. Cl.[4] F24J 2/48

U.S. Cl. 350—96.10 **8 Claims**



1. A radiant energy concentrator for radiation energy having a predetermined wave length, a dielectric slab wave guide means having an upper surface exposed to radiant energy to be concentrated, a bottom surface, means causing said bottom surface to be reflective, an edge for emitting concentrated radiant energy to a utilization device, said slab wave guide means comprising cylindric optical wave guide elements, each said wave guide element having coaxial diffuser means for internally scattering the incident radiation and causing a fraction of the scattered incident radiation to enter guide modes and become trapped within the cylindric optical wave guide while the untrapped portion of the initial scattered radiation is internally reflected by dielectric slab wave guide means and said bottom reflective surface, through other of said cylindric optical wave guide elements with coaxial diffuser means, thereby trapping an additional fraction of the initial untrapped portion of scattered radiation within cylindric optical wave guide element and by cumulative propagation of trapped incident radiation energy along the cylindric optical wave guide element lengths effect a concentration of incident radiation energy at said edge for emission to a utilization device.

4,799,749

INTEGRATED RESONATOR MATRIX FOR WAVELENGTH-SELECTIVE SEPARATION OR JOINING OF CHANNELS IN THE FREQUENCY DOMAIN OF OPTICAL COMMUNICATIONS TECHNOLOGY

Manfred Börner, Ulm; Reinhard Müller, Ingolstadt, and Gert Trommer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE86/00069 § 371

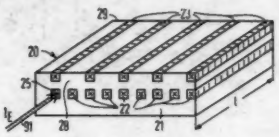
Date Oct. 14, 1986, § 102(e). Date Oct. 14, 1986, PCT Pub. No. WO86/04999, PCT Pub. Date Aug. 28, 1986

PCT filed Feb. 25, 1986, Ser. No. 924,848

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1985, 3506569

Int. Cl.[4] G02B 6/10

U.S. Cl. 350—96.13 **48 Claims**



1. Arrangement of optical resonators which are composed of dielectric waveguides which are mirrored at their ends predominantly with reflectors having high reflection factors close to the value one and whose longitudinal extent between the reflectors is great in comparison to the transverse dimensions perpendicular thereto, characterized in that all optical resonators are integrated on a substrate to form a matrix-like arrangement, referred to as resonator matrix, being integrated such that two types of resonators can be distinguished, whereby the resonators of the first type are highly coupled to one another and act as coupled resonators (22, 221, 222), whereas the resonators of the second type act as wavelength-selective useful resonators (23, 231, 232) and, in comparison to the couplings between the resonators of the first type, are weakly coupled to one another or, respectively, to the resonators of the first type and form at least two useful resonator groups which are coupled to one another as little as possible, whereby a useful resonator group contains one or more useful resonators.

4,799,750

OPTICAL FUNCTION ELEMENT AND A METHOD FOR MANUFACTURING THE SAME

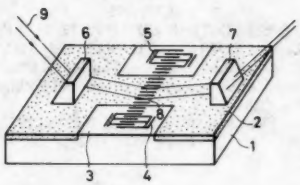
Mamoru Miyawaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1984, Ser. No. 667,165

Claims priority, application Japan, Nov. 4, 1983, 58-207773; Jan. 23, 1984, 59-010507; Jan. 23, 1984, 59-010508

Int. Cl.[4] G02B 6/10

U.S. Cl. 350—96.13 **23 Claims**



1. In an optical function element comprising a substrate having a surface, a thin film optical waveguide formed by ion-exchange on a region of said surface of said substrate, and means for effecting one of modulation and deflection of light propagating in the optical waveguide by an electric field applied to defract light in the optical waveguide, wherein the improvement comprises said means for effecting one of modu-

lation and deflection being provided at another region of said surface of said substrate than said region where said waveguide is formed.

4,799,751

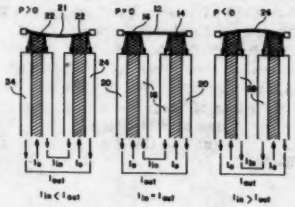
DETECTION DEVICE USING FIBER OPTIC TECHNIQUES

Vincent J. Tekippe, Des Plaines, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 16, 1983, Ser. No. 494,843

Int. Cl.[4] G02B *6/26, 6/02;* **H01J** *5/16;* **H01R** *39/46*

U.S. Cl. 350—96.15 **11 Claims**



1. A deflection detection device for monitoring deflection of a diaphragm, having a radium r comprising:

a first plurality of optical fibers having fiber ends concentrically disposed about a center of said diaphragm, said first plurality of optical fibers forming a circle having a radium r_1, where $r_1 < r$;

a second plurality of optical fibers having fiber ends concentrically disposed about the center of said diaphragm, said second plurality of optical fibers forming a circle having a radium r_2 where $r > r_2 > r_1$;

a third plurality of optical fibers having fiber ends concentrically disposed about the center of said diaphragm, said third plurality of optical fibers forming a circle having a radius r_3 where $r > r_3 > r_2$;

said ends of said first and third plurality of optical fibers are light capturing and said ends of said second plurality of fibers are light emitting, light from said second plurality of fibers being reflected off of said diaphragm into said firsts and third plurality of optical fibers in proportion to the amount of deflection of said diaphragm according to a predetermined ratio.

4,799,752

FIBER OPTIC GRADIENT HYDROPHONE AND METHOD OF USING SAME

Edward F. Carome, Cleveland, Ohio, assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sep. 21, 1987, Ser. No. 99,199

Int. Cl.[4] G02B *6/26;* **G01D** *5/34;* **G01B** *9/02;* **H04R** *17/00*

U.S. Cl. 350—96.15 **20 Claims**

1. A fiber optic gradient hydrophone for measuring acoustic pressure gradients in a fluid such as water, comprising:

a body configured to be neutrally buoyant in the fluid;

a fiber optic interferometer having a first light path and a second light path in the neutrally buoyant body;

means for introducing optical signals into the first and second light paths; and

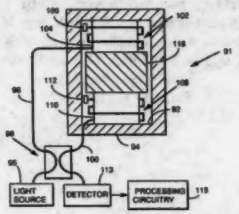
means for producing in the optical signals a phase change indicative of acoustic pressure gradients on the neutrally buoyant body.

11. A method for measuring acoustic pressure gradients in a fluid such as water, comprising the steps of:

forming a body to be neutrally buoyant in the fluid;

placing a fiber optic interferometer having a first light path and a second light path in the neutrally buoyant body;

introducing optical signals into the first and second light paths; and



producing in the optical signals a phase change indicative of acoustic pressure gradients on the neutrally buoyant body.

4,799,753

TERMINAL FOR A RADIATION CONDUCTOR

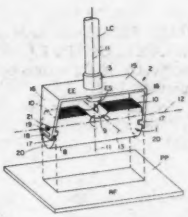
Friedrich-Wilhelm Breitbarth; Hans-Jürgen Tiller; Michael Grosch, all of Jena, German Democratic Rep.; Albert Schmidt, Bad Homburg, Fed. Rep. of Germany; Ralf Janda, Bad Homburg, Fed. Rep. of Germany, and Steffen Oppawsky, Bad Homburg, Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Apr. 21, 1986, Ser. No. 854,349

Claims priority, application German Democratic Rep., Apr. 25, 1985, 275544

Int. Cl.[4] G02B *6/32*

U.S. Cl. 350—96.18 **18 Claims**



1. Radiation conductor terminal providing uniform irradiation over a substantially rectangular field comprising:

a radiation conductor having end means emitting radiation along the axis of the conductor;

transparent, longitudinal cylindrical lens body means with rectangular cross sections in planes perpendicular to the axis of the radiation conductor one side of which faces the end of said radiation conductor;

means for mounting said lens body means and the end of said radiation conductor with the axis of said lens body perpendicular to the axis of the radiation conductor; and

said lens body having a transverse trough-shaped recess axially symmetrical in cross section and opening with a continuously expanding width toward the end of said radiation conductor, the bottom thereof being perpendicular to the axis of the radiation conductor and perpendicular to the axis of said lens body, said trough being transverse to the rectangular cross sections of said lens body, whereby radiation emitted from the end of said radiation conductor is uniformly illuminated in a rectangular field of illumination radiation.

4,799,754

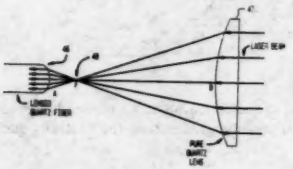
DELIVERY SYSTEM FOR HIGH-ENERGY PULSED ULTRAVIOLET LASER LIGHT

Tsvi Goldenberg, Allentown, Pa., assignor to Advanced Interventional Systems, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 779,844, Sep. 25, 1985, Pat. No. 4,732,448, which is a continuation-in-part of Ser. No. 679,538, Dec. 7, 1984, Pat. No. 4,641,912. This application May 6, 1986, Ser. No. 860,241

Int. Cl.[4] G02B *23/26*

U.S. Cl. 350—96.18 23 Claims



1. A system for the delivery of high energy pulsed laser light utilizing an optical waveguide, wherein said waveguide comprises an optical fiber having an energy-conducting core made of synthetic silica that is substantially free of metallic impurities and that is doped with a material that functions to repair inherent structural defects in the silica, and further including an energy coupler at one end of said fiber for enabling energy pulses to be coupled into said fiber while maintaining their energy level without damage to said fiber.

2. The delivery system of claim 1 wherein said energy coupler includes at least one lens for changing the diameter of a beam of laser light to be substantially the same as the diameter of said fiber.

4,799,755

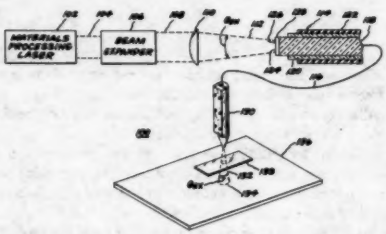
LASER MATERIALS PROCESSING WITH A LENSLESS FIBER OPTIC OUTPUT COUPLER

Marshall G. Jones, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1987, Ser. No. 136,071

Int. Cl.[4] G02B *6/32*

U.S. Cl. 350—96.18 12 Claims



1. Laser materials processing apparatus, comprising:

a fiber optic for transmitting a materials processing laser beam, said fiber optic having a predetermined diameter;

lens means for focusing a collimated portion of the laser beam as a focused beam portion onto an input end of said fiber optic for transmission therethrough, the collimated laser beam having a predetermined beam divergence;

output coupling means for supporting an output end of said fiber optic;

a diverging portion of the laser beam emitted from said fiber optic output end having an exit cone angle approximately equal to an entry cone angle of the focused beam portion; and

said lens means having a focal length selected so that the diverging portion of the laser beam emitted from said fiber optic output end projects an unfocused beam spot onto a workpiece positioned at a predetermined working distance from said fiber optic output end, the projected unfocused spot having a power density sufficient to perform a predetermined laser materials processing task on the workpiece.

4,799,756

REMOTE MULTI-POSITION INFORMATION GATHERING SYSTEM AND METHOD

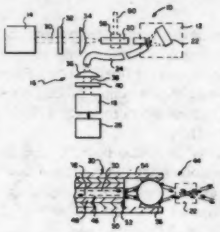
Tomas B. Hirschfeld, Livermore, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 480,844, Mar. 31, 1983, Pat. No. 4,626,693, which is a continuation of Ser. No. 194,684, Oct. 6, 1980, abandoned. This application Nov. 1, 1985, Ser. No. 793,961

The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.

Int. Cl.[4] G02B *6/32*

U.S. Cl. 350—96.18 22 Claims



1. An optical fiber arrangements especially suitable for directing a beam of light into a given area adjacent a first location from a second location and/or for collecting newly generated fluorescent light emanating from a sample within said given area and directing it to said second location, said arrangement comprising: elongated optical fiber means having first and second opposite ends positioned at said first and second locations, respectively; a spherical lens having a focal point on each side thereof, whereby light at either one of said focal points is focused to the other by said lens; means for fixedly connecting said lens in confronting but spaced apart relationship with said first end of said optical fiber means such that one of the focal points of said lens is disposed at said first end and the other focal point is positionable within said given area, whereby light passing through said optical fiber means from its second end to its first end can be focused to a focusing point within said given area and light generated at said focusing point within said area can be focused into said first end of said fiber means for movement through latter to said second end; and means cooperating with said lens and designed to interact with said sample for altering the sample's fluorescent light emitting characteristics in a predetermined way.

4,799,757

ENCAPSULATED FIBER OPTIC CLOSURE

Erwin H. Goetter, Chesterland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Apr. 21, 1987, Ser. No. 40,926

Int. Cl.[4] G02B *6/36*

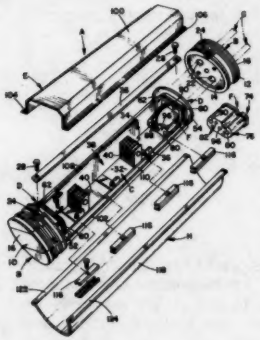
U.S. Cl. 350—96.20 16 Claims

1. A closure assembly adapted for encapsulating an associated fiber optic cable, the closure assembly comprising:

first and second opposed end plates disposed in laterally

spaced apart relation and defining a cavity therebetween, said first end plate having an opening therethrough adapted to closely receive an associated cable into said cavity;

a cover extending between said first and second end plates for enclosing said cavity; and,



a resin cup having a first open end engaging said first end plate and a second generally closed end having an aperture adapted to closely receive the associated cable therethrough, said rein cup further including a fill port spaced from said aperture for receiving said resin therein whereby ingress of moisture to the central cavity is limited.

4,799,758

ADAPTOR FOR A LIGHT WAVEGUIDE PLUG CONNECTOR

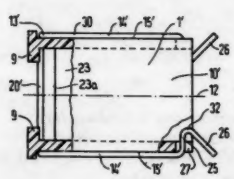
Peter Pohl, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 75,993

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625075

Int. Cl.[4] G02B *6/36, 6/38*

U.S. Cl. 350—96.2 R **8 Claims**



1. In an adaptor for a light waveguide connector having two pluggable parts, said adaptor having a housing with a pair of side walls, a top wall, a bottom wall, a first end, a second end, and a through-opening with an axis extending between the first and second ends, and spring means for engaging the plug parts to hold the parts in the through-opening, each of the side walls of the housing adjacent the second end being provided with a web extending inwardly into the opening, each of said webs merging with the top wall, said bottom wall having a recess adjacent the web so that the opposite ends of the webs are free ends that are freely accessible so that a pluggable part with channels can be inserted laterally transverse to the axis of the opening with the channels being received on said webs, the improvements comprising said spring means being a U-shaped spring clip having a bight portion interconnecting two legs, said spring clip being mounted on the housing with the legs extending along outer surfaces of the side walls of the housing with the bight portion being at the second end to extend across the free ends of said webs to hold the plug part thereon and the free ends of the legs being at the first end and forming interlocking means for engaging a plug part inserted into the first end and holding the plug part therein.

4,799,759

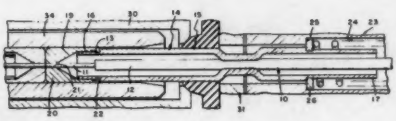
FIBER OPTIC CONNECTOR

Marik Balyasny, Van Nuys, Calif., assignor to G & H Technology, Inc., Santa Monica, Calif.

Filed Jun. 26, 1986, Ser. No. 855,401

Int. Cl.[4] G08B *6/38*

U.S. Cl. 350—96.21 **1 Claim**



1. In an optical fiber connector having first and second contacts for respectively holding first and second optical fibers to be interconnected, each said fiber having a bare fiber end portion with a faced-off end, the improvement comprising:

each contact including a tubular member having a bore of sufficient cross-sectional dimensions as to enable receipt of an optical fiber therewithin, said tubular member being constructed of a malleable material and having a part laterally crimped to clampingly engage the optical fiber carried therewithin;

tip means releasably enclosing one end of the tubular member and having an opening therein colinear with the tubular member longitudinal axis and of cross-sectional dimensions slightly larger than the diameter of a bare optical fiber, and an outer end surface faced off at substantially 90° to the tip means opening;

said tip means being cylindrical with an axially extending generally cylindrical bore open at one end and having an end wall closing off the other end, an opening being formed in the end wall colinear with the tip means cylindrical axis, and an inwardly directed flange on the tip means bore wall being received in a groove on the tubular member; and

a hollow terminus body within which the tubular member is resiliently mounted to extend outwardly of an end of the terminus body and a strength member termination means affixed to the other end of the terminus body, said terminus body having a bore extending therethrough with a first diameter region and a second diameter region smaller than the first diameter region, said tubular member other end portion being received through the hollow terminus body bore and including a washer of diameter greater than the second diameter region preventing withdrawal of the tubular member and coil spring means within the hollow terminus bore resiliently mounting the tubular member therewithin.

4,799,760

STRAIN RELIEF APPARATUS

Johnny W. Beatty, Denver, and Brian A. DiMarco, Taylorsville, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Feb. 29, 1988, Ser. No. 161,678

Int. Cl.[4] G02B *6/44*

U.S. Cl. 350—96.23 **7 Claims**

1. A strain relief apparatus, comprising:

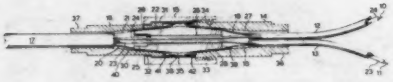
(a) first and second members each having (i) an outer surface, (ii) a first end, and (iii) an inner surface delimiting a

central bore, the inner surface tapered so that the bore diameter decreases from the first end toward the middle portion of the member;

(b) a wedging member having (i) first and second ends, (ii) an outer surface tapering from wide to narrow from the wedging member middle portion toward the wedging member first and second ends, and (iii) a central bore, the wedging member first end inserted within the first member bore at the first member first end, and the wedging member second end inserted within the second member bore at the second member first end;

(c) a first tube and a second tube, the wedging member located between the first and second tubes;

(d) a plurality of first strength members within the interior of the first tube and extending between the wedging member outer surface and the first member inner surface;



(e) a plurality of second strength members within the interior of the second tube and extending between the wedging member outer surface and the second member inner surface;

(f) a first communications member extending from the interior of the first tube through the central bores of the first member, wedging member, and second member, respectively, and into the interior of the second tube; and

(g) urging means for urging the first and second members toward each other, whereby (i) the first strength members are tightly held between the wedging member outer surface and first member inner surface, and (ii) the second strength members are tightly held between the wedging member, outer surface and the second member inner surface.

4,799,761

PLASTIC OPTICAL TRANSMISSION MEDIUM, PROCESS FOR PRODUCING THE SAME AND ARRAY OF LENSES USING THE SAME

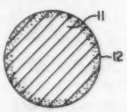
Takashi Yamamoto; Yoshihiko Mishina, and Masaaki Oda, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 31,508

Claims priority, application Japan, Mar. 27, 1986, 61-67183; May 12, 1986, 61-106751; May 15, 1986, 61-111089

Int. Cl.[4] G02B *6/18*

U.S. Cl. 350—96.31 **24 Claims**



1. A plastic optical transmission medium having a singular body in which the refractive index varies continuously, in a radial direction from the interior toward the surface of the body, said body having a layer formed under the surface thereof and containing a light-absorbing substance.

4,799,762

RESIN COMPOSITE

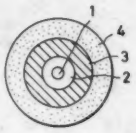
Tatsuya Kakuta, and Nobuhiro Akasaka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 11, 1987, Ser. No. 60,613

Claims priority, application Japan, Jun. 13, 1986, 61-136219; May 22, 1987, 62-123917

Int. Cl.[4] G02B *6/00, 6/10*

U.S. Cl. 350—96.34 **5 Claims**



1. A coated optical fiber comprising an optical fiber, first layer formed over said optical fiber and second layer formed over said first layer, said first and second layers being composed of a first resin having a negative coefficient of linear expansion and a second resin having a positive coefficient of linear expansion, respectively.

4,799,763

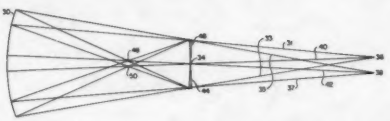
PARAXIAL STEREOSCOPIC PROJECTION SYSTEM

John R. Davis, Dublin, and Marlin O. Thurston, Columbus, both of Ohio, assignors to Canaby Technologies Corporation, Columbus, Ohio

Filed Mar. 27, 1987, Ser. No. 31,529

Int. Cl.[4] G02B *27/24, 17/06, 27/10*

U.S. Cl. 350—137 **13 Claims**



1. A stereoscopic projection system for viewing from an eye station a stereoscopic image comprising:

a pair of image sources each having an image center which are spaced-apart from each other;

a concave spherical mirror segment having a center of curvature and located between said image source pair and said viewable stereoscopic image which also has an image center, and being disposed so that said image centers of said image source pair and said viewable stereoscopic image are located at said center of curvature;

image deflecting means disposed between each image source and said spherical mirror about the juncture whereat the aperture of the system is the smallest so that the image center of each of said image sources are located in spaced-apart relationship; and

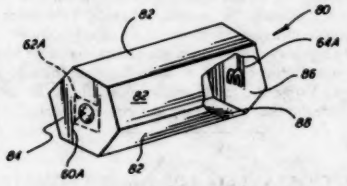
beam splitter means interposed to reflect image projection between said deflecting means and said spherical mirror and to pass image projection between said spherical mirror and said eye station.

4,799,764

SPECTRAL IMAGE VIEWING DEVICE

Christopher S. Crowell, Old Lyme, Conn., assignor to Structural Graphics, Inc., Essex, Conn.

Filed Dec. 23, 1987, Ser. No. 137,421
Int. Cl.[4] B44F 1/00; G02B 27/04
U.S. Cl. 350—162.18 10 Claims



1. A spectral image viewing device comprising:

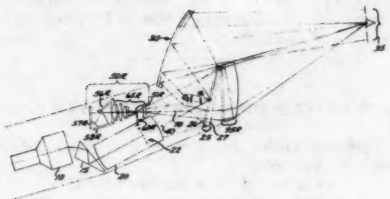
a structure having first and second spaced apart panels and forming an enclosure, said first panel having a viewing aperture formed therein through which a user can peer, said second panel having an image producing aperture therein in a desired shape, said viewing aperture and said image producing aperture being aligned so that a direct line of vision of a user peering through said viewing aperture extends through said image producing aperture; and a semi-transparent prismatic device mounted within said enclosure between said viewing aperture and said image producing aperture in the direct line of vision of the user, whereby said semi-transparent prismatic device separates white light coming from the exterior of said enclosure and passing through the enclosure between said image producing aperture and said view aperture into an array of visually perceptible spectral images.

4,799,765

INTEGRATED HEAD-UP AND PANEL DISPLAY UNIT

John J. Ferrer, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 846,445, Mar. 31, 1986. This application Sep. 24, 1987, Ser. No. 105,527
Int. Cl.[4] G02B 27/14, 5/18, 5/28
U.S. Cl. 350—174 23 Claims



1. An integrated head-up and panel display system comprising:

a first image source for projecting a HUD image;

a second image source for projecting a panel image;

a combiner for directing HUD image light to a system exit pupil;

a panel screen for display of panel image light; and

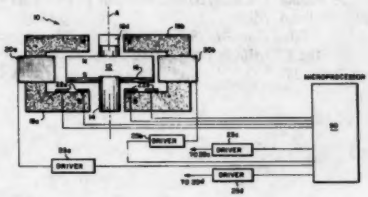
optical selector means arranged to substantially reflect light from said first image source toward said combiner and to substantially transmit light therethrough from said second image source toward said panel screen.

4,799,766

OBJECTIVE LENS SUPPORT AND POSITIONING SYSTEM

Marvin F. Estes, Oakfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1988, Ser. No. 168,209
Int. Cl.[4] G02B 7/02
U.S. Cl. 350—252 7 Claims



5. An objective lens support and positioning system comprising:

an objective lens having an optical axis;

a disk member of permanent magnet material affixed to said objective lens;

a disk wafer of electret material having an inherent charge affixed to said disk member;

a plurality of U-shaped pole pieces symmetrically positioned around the edges of said disk member;

a plurality of coils, each wound around the center of a corresponding pole piece;

a plurality of pairs of sensor plates, each pair affixed to a corresponding U-shaped pole piece adjacent said disk wafer of electret material; and

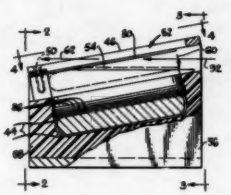
control means coupled to said pairs of sensor plates for sensing the strength of the charge of said electret material as a function of the distance between the pairs of sensor plates and said disk wafer and for providing current to said plurality of coils so as to position said objective lens at a desired position.

4,799,767

HIGH SPEED SHUTTER FOR A LASER BEAM

David C. Woodruff, Santa Clara, Calif., assignor to NM Laser Products, Inc., Sunnyvale, Calif.

Filed Apr. 5, 1988, Ser. No. 177,952
Int. Cl.[4] G02B 26/02
U.S. Cl. 350—269 10 Claims



1. A shutter mechanism for shuttering a laser beam directed along a path from a source comprising,

an electromagnet and flexible ferromagnetic blade mounted in narrow V-shaped relationship to one another at an end opposite from a light source, the electromagnet and blade lying with a light path passing between,

said electromagnet communicating with an electrical power supply and having a cylindrical core and a toroidal wind-

ing about said core, said core having a lengthwise slice defining poles, a free end of said blade positioned to flex toward said poles when said electromagnet is active,

means for absorbing light reflected from said blade, and

means for dissipating heat from said absorbing means.

4,799,768

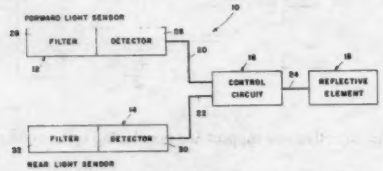
AUTOMATIC REARVIEW MIRROR WITH FILTERED LIGHT SENSORS

Edward A. Gahan, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Apr. 27, 1987, Ser. No. 43,209

Int. Cl.[4] B60R *1/06*; G02B *5/08, 17/00*

U.S. Cl. 350—279 **11 Claims**



1. An automatic rearview mirror comprising:

a reflective element having a plurality of reflective states;

light sensor means for outputting a signal responsive to light directed onto said light sensor means, said light sensor means including a detector means for outputting the signal responsive to the intensities of electromagnetic wavelengths received by said detector means and a filter means for filtering the electromagnetic wavelengths reaching said detector means, the spectral response of said detector means and the spectral transmission of said filter means being such that together the spectral response of said light sensor means more closely approximates the spectral response of the human eye than does the unfiltered detector means; and

a control means responsive to at least the signal for controlling the reflective state of said reflective element.

4,799,769

LIQUID CRYSTAL ANTIDAZZLE MIRROR

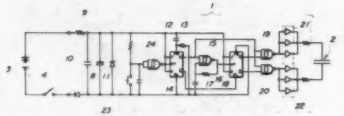
Hiroshi Demura, Toyota, Japan; Akira Kawahashi, Stanford, Calif.; Kazumi Hayashi, Okazaki, and Sadao Kokubu, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 9, 1986, Ser. No. 883,881

Claims priority, application Japan, Jul. 9, 1985, 60-104583

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—331 R **3 Claims**



1. An antidazzle mirror including a liquid crystal layer disposed in front of the mirror and a drive control circuit for controlling the operating mode of the liquid crystal, the drive control circuit comprising:

a drive circuit for controlling a voltage applied to the liquid crystal to change the light transmission factor of the layer between a high transmission dazzle mode and a low transmission antidazzle mode;

a mode memory circuit connected to the drive circuit for delivering a command signal for selectively placing the mirror in one of the dazzle and antidazzle modes; and

a mode switching circuit connected to the mode memory circuit, the mode switching circuit having a manually operable switch for changing the mode memory circuit from the one mode to the other mode, wherein

a capacitor is connected across power supply lines in parallel with a power source between a power switch and the mode memory circuit so as to be charged when the power switch is closed, the capacitor having a predetermined capacity sufficient to continue to supply power to the mode memory circuit for a predetermined time after the power switch is opened, so as to maintain for said predetermined time the mode memory circuit in the mode in effect at the time of opening the power switch.

4,799,770

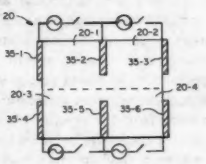
LIQUID CRYSTAL CELL FOR IMAGE PROJECTIONS AND METHOD OF OPERATING SAME

Frederick J. Kahn, Palo Alto; Elizabeth A. Nevis, Menlo Park, and Jerry Leff, Saratoga, all of Calif., assignors to Greyhawk Systems, Inc., Milpitas, Calif.

Continuation of Ser. No. 914,640, Oct. 2, 1986. This application Mar. 8, 1988, Ser. No. 169,097

Int. Cl.[4] G02F *1/13*; G11C *7/00, 13/04*

U.S. Cl. 350—331 R **22 Claims**



1. In a liquid crystal cell for a light control device, said liquid crystal cell being generally planar, having a surface area bounded by peripheral edges, and comprising a liquid crystal layer sandwiched between a first conductive layer and a second conductive layer and first means for applying a voltage difference between said conductive layers, the improvement wherein said surface area defines a plurality of mutually adjacent regions, each mutually adjacent pair of said regions defining therebetween a boundary line, said liquid crystal cell further comprising a plurality of busbars disposed along said peripheral edges and said boundary lines, and second means for applying a voltage difference between at least one mutually adjacent pair of said busbars.

4,799,771

LIQUID CRYSTAL DISPLAY WITH STOPPER PINS IN GUIDE MEANS

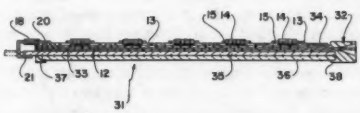
Koki Taniguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1986, Ser. No. 819,023

Claims priority, application Japan, Jan. 22, 1985, 60-7837[U]; Apr. 15, 1985, 60-56493[U]

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—334 **7 Claims**



1. A liquid crystal display device comprising

a circuit substrate,
a flat back light having first and second edges,
first guide means attached to said circuit substrate for receiving said first edge of said flat back light,
second guide means, parallel to and spaced from said first guide means, attached to said circuit substrate for receiving said second edge of said flat back light, and
an electrode substrate secured to said first and second guide means by stopper pins.

4,799,772

UNIAXIALLY HIGH-ORIENTED POLYETHYLENE NAPHTHALATE FILM FOR LIQUID CRYSTAL PANEL SUBSTRATES

Shigeo Utsumi, Yokohama, Japan, assignor to Diafoil Company, Limited, Tokyo, Japan

Filed Dec. 1, 1986, Ser. No. 936,311
Claims priority, application Japan, Dec. 9, 1985, 60-276647
Int. Cl.[4] G02F *1/13*; B32B *7/02, 29/00*
U.S. Cl. 350—339 R 7 Claims

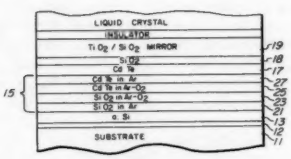
1. A uniaxially highly-oriented polyethylene naphthalate film useful for liquid crystal panel substrates, having an in-plane birefringence of more than 0.110 after said film is stretched and subjected to a heatset treatment ranging from 200° to 270° C.

4,799,773

LIQUID CRYSTAL LIGHT VALVE AND ASSOCIATED BONDING STRUCTURE

Rodney D. Sterling, Carlsbad, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 27, 1987, Ser. No. 90,053
Int. Cl.[4] G02F *1/135*
U.S. Cl. 350—342 24 Claims



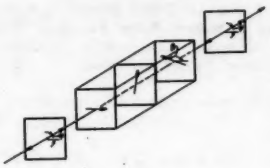
18. A structure for bonding cadmium telluride to a base layer comprising amorphous silicon, single crystal silicon or silicon dioxide, the structure comprising:
a silicon dioxide layer formed on said base layer;
an oxygen enriched silicon dioxide layer formed on said silicon dioxide layer;
an oxygen enriched cadmium telluride layer formed on said oxygen enriched silicon dioxide layer; and
a cadmium telluride layer formed on said oxygen enriched cadmium telluride layer.

4,799,774

ELECTROOPTICAL DISPLAY ELEMENT USING A SUPERTWIST LIQUID CRYSTAL HAVING SPECIFIED ELASTIC CONSTANTS

Güter Baur, Freiburg, Fed. Rep. of Germany; Bernhard Scheuble, Yokohama, Japan, and Waltraud Fehrenbach, Emmendingen, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP87/00135, § 371 Date Nov. 17, 1987, § 102(e) Date Nov. 17, 1987, PCT Pub. No. WO87/05714, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 9, 1987, Ser. No. 130,388
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609141
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—346 4 Claims



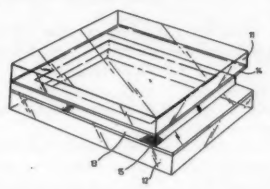
1. Method of improving the contrast effect of an electrooptical display element which can be multiplexed, has two support plates which, with an edging, form a cell containing a nematic liquid crystal material with positive dielectric anisotropy and at least one chiral additive, has a characteristic line of the transmission of light through the display element as a function of voltage applied across the cell, and has a small surface tilt angle and a twist angle with a value between 150° and 250°, characterized in that the ratio of the elastic constants for bending and twisting K_3/K_2 of the liquid crystal material and the twist angle are adjusted so that by using a liquid crystal material with the maximum possible ratio of the elastic constants K_3/K_1 for bending and spreading, the steepness of the characteristic line is improved but the characteristic line is bistable, or by using a liquid crystal material with the smallest possible ratio of the elastic constants K_3/K_1 for bending and spreading, the steepness of the characteristic line is improved but the characteristic line remains stable.

4,799,775

FERROELECTRIC LIQUID CRYSTAL CELLS HAVING A HELICAL LIQUID CRYSTAL STRUCTURE

William A. Crossland, Harlow; Anthony B. Davey, and Matthew F. Bone, both of Bishop's Stortford, all of England, assignors to STC PLC, London, England

Filed Mar. 31, 1987, Ser. No. 32,760
Claims priority, application United Kingdom, Apr. 1, 1986, 8607953
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—350 S 4 Claims



1. A ferroelectric liquid crystal cell exhibiting bistability of operation, which cell has a smectic I* or F* phase liquid crys-

tal layer confined between opposed electroded plates only one of those inward facing surfaces have been treated to promote planar alignment of the adjacent liquid crystal molecules in a selected direction, which plates serve to define the thickness of the liquid crystal layer, said thickness being in the range from 4 to 40 microns, and being of a sufficient magnitude such that a helical arrangement of the liquid crystal molecules of said liquid crystal layer is obtained when said layer is cooled in the absence of an applied electric field into said smectic I^* or F^* phase from a less-ordered phase that is not an inclined smectic phase.

4,799,776

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE HAVING A SINGLE POLARIZER

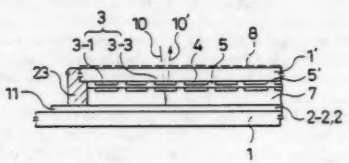
Shunpei Yamazaki, Tokyo; Takashi Inujima, Kanagawa; Akira Mase, Kanagawa; Toshimitsu Konuma, Kanagawa; Mitsunori Sakama, Kanagawa; Toshiji Hamatani, Kanagawa; Minoru Miyazaki, Kanagawa; Kaoru Koyanagi, Nagano, and Toshiharu Yamaguchi, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP86/00329, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00301, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 27, 1986, Ser. No. 34,165

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—350 S **15 Claims**



1. A liquid crystal device comprising:

a transparent substrate;

an opposite substrate;

a ferroelectric liquid crystal layer interposed between said transparent substrate and said opposite substrate; and

an electrode arrangement for inducing an electric field perpendicular to and across said crystal layer, said arrangement including a reflective electrode portion by which is reflected light passing through said transparent substrate and incident on said reflective electrode portion.

4,799,777

MULTI-FREQUENCY ACOUSTO-OPTIC MODULATION PROCESS AND APPARATUS

Bridoux Edouard; Camus Lievin; Bruneel Christian; Gazalet Marc, and Roger Torguet, all of Valenciennes, France, assignors to Centre National De La Recherche Scientifique, Paris, France

Filed Mar. 31, 1987, Ser. No. 32,349

Claims priority, application France, Apr. 2, 1986, 86 04710

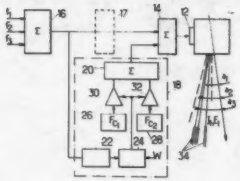
Int. Cl.[4] G02F *1/11, 1/33*

U.S. Cl. 350—358 **2 Claims**

1. In a process for acousto-optic modulation of a light beam comprising:

applying a composite electrical signal having a plurality of drive components at different specific modulation frequencies and having two compensation components one of which has a frequency lower than all the frequencies of all said drive components and the other of which has a frequency which is higher than all the frequencies of all said drive components to a transducer of an acousto-optic modulator, and

directing an entering monochromatic light beam into said acousto-optic modulator for delivery of deflected output beams,



the improvement consisting in servo-controlling the cumulated electric power of said two compensation components to maintain the total acoustic power applied to the modulator by said transducer at a substantially constant value and distributing said cumulated electric power equally between the two said compensation components.

4,799,778

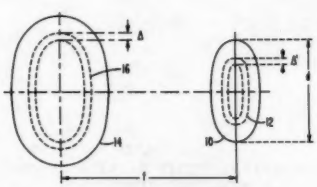
FRESNEL LENS CONCENTRATOR

Robert W. Jebens, Skillman, N.J., assignor to General Electric Company, Fairfield, Conn.

Filed Apr. 8, 1986, Ser. No. 849,437

Int. Cl.[4] G02B *3/08*

U.S. Cl. 350—452 **10 Claims**



1. A Fresnel lens having a central optical axis passing through perpendicularly to the lens plane and comprising a plurality of concentric ring-like facets for converging light onto a target plane through which said central optical axis passes at least substantially perpendicularly to illuminate said target plane in a plurality n'_f in number of concentric ring-like areas about said axis, wherein successive groups of contiguous facets of said lens have respective consecutive ordinal numbers respectively from the center at the optical axis to the periphery of said lens, which successive odd-numbered groups of contiguous facets converge light onto successive ring-like areas of said target plane respectively from the periphery to the center of said target at said axis, which successive even-numbered groups of contiguous facets also converge light onto said successive ring-like areas of said target plane respectively from the periphery to the center of said target, wherein each ring-like area of said target plane receives substantially focussed light passing through a respective group of consecutive ring-like facets, said groups each containing a predetermined number of such facets according to a fraction of the total light as would pass through that group as through the entire leans under conditions of uniform illumination by light parallel to said optical axis so as to maintain a uniform light intensity over the surface of the target plane under such illumination conditions wherein each even-numbered group of said consecutive ring-like facets is arranged to converge its fraction of said light so as

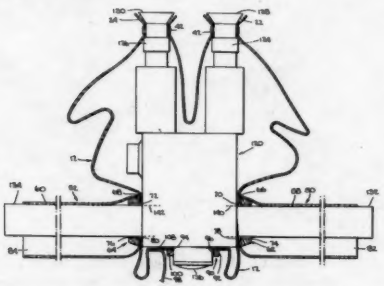
not to cross the optical axis before reaching the target plane and wherein each odd-numbered group of said consecutive ring-like facets is arranged to converge its fraction of said light so as to cross the optical axis before reaching the target plane.

4,799,779

MICROSCOPE DRAPE

Jeffrey C. Mesmer, 4191 Deepwood La., Cincinnati, Ohio 45245

Filed Mar. 22, 1988, Ser. No. 171,682
Int. Cl.[4] B65D *85/38, 65/02*
U.S. Cl. 350—585 **20 Claims**



1. A disposable microscope drape for covering an operating microscope having ocular and objective portions, and a support portion, said drape comprising,

(a) an elongated main body portion elongated in a longitudinal direction, for covering said support portion, said ocular portion and said objective portion of said microscope, said main body portion being formed of flexible sheet material and having opposite end portions, one of said end portions being open, the other said end portion being substantially closed for positioning at the ocular and objective portions of said microscope,

(b) at least one flexible sleeve member having a first sleeve end portion joined to said main body portion, said sleeve member having an opposite free end portion, and

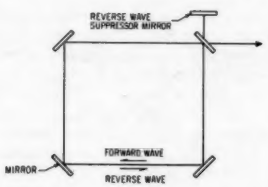
(c) reinforcing means provided at the junction between said first sleeve end portion and said main body portion to strengthen the joint between said first sleeve end portion and said main body portion.

4,799,780

ABERRATED SUPPRESSOR MIRROR

Jay M. Bernard, Torrance; Richard A. Chodzko, Rancho Palos Verdes, and Timothy J. Bixler, Gardena, all of Calif., assignors to The Aerospace Corporation, El Segundo, Calif.

Filed Jan. 23, 1987, Ser. No. 6,413
Int. Cl.[4] G02B *5/08*
U.S. Cl. 350—600 **3 Claims**



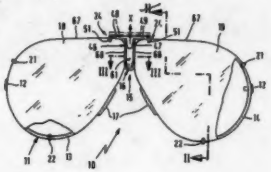
1. A reverse wave suppressor mirror apparatus, the improvement comprising mirror surface undulations of a periodic height and width wherein a reverse wave is effectively reinjected in the direction of a forward wave of the apparatus over a wide range of mirror tilt angles from approximately 50 microradians to at least 600 microradians.

4,799,781

EYEGLASSES WITH DETACHABLE LENSES

Karl Weber, Stuttgart, Fed. Rep. of Germany, assignor to Polaroid Corporation, Cambridge, Mass.

PCT No. PCT/EP87/00117, § 371 Date Oct. 30, 1987, § 102(e) Date Oct. 30, 1987, PCT Pub. No. WO87/05405, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 27, 1987, Ser. No. 127,294
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 8605669[U]
Int. Cl.[4] G02C *1/00, 5/04*
U.S. Cl. 351—86 **9 Claims**



1. Eyeglasses, in which lenses are positioned on sockets connected by a bridge and retained by hook-shaped members attached to the sockets and extending over the lenses, characterized by the fact that the bridge **(16)** comprises at least one slidable member **(46)** preferably vertically slidable between open and closed positions provided with two hook members **(51)** at preferably two cantilever arms **(48, 49)** extending parallel to the bridge **16**, said hooks **(51)** of the slidable members each grasping a respective lens **(18, 19)** when the slidable member **(46)** is in its closed position.

4,799,782

ADJUSTABLE EYE GLASS FRAME

John Tuttle, Box 873212, Wasilla, Ak. 99687

Filed Jul. 6, 1987, Ser. No. 70,569
Int. Cl.[4] G02C *5/20*
U.S. Cl. 351—118 **15 Claims**

1. An adjustable eyeglass temple, hingeably attached to an eyeglass frame, comprising

(A) a temple ahving a front hinge adjusting tube and a rear ear piece adjusting tube, said rear ear piece adjusting tube being slidably disposed within said front hinge adjusting tube such that said rear ear piece adjusting tube can telescopically expand therefrom and retract thereto;

(B) adjusting means fixedly installed within said front hinge adjusting tube and removably installed within said rear ear piece adjusting tube such that the overall length of said temple can be shortened or lengthened by said adjusting means, said adjusting means being only accessible for adjustment from the front of said temple.

(C) concealment means removably disposed and installed to conceal said adjustment means from view during normal use of the eyeglasses;

(D) locking means disposed within said rear ear piece adjusting tube such that said locking means prevent the rotation of said rear ear piece adjusting tube to prevent inadvertent adjustment of the length of said temple.

4,799,783
EYE FUNDUS CAMERA

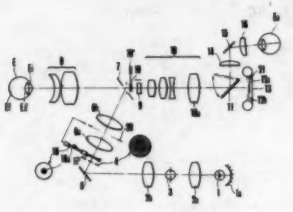
Junichi Takahashi, and Yuji Itoh, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 842,769, Mar. 24, 1986, abandoned, which is a continuation of Ser. No. 782,180, Sep. 30, 1985, abandoned, which is a continuation of Ser. No. 668,700, Nov. 6, 1984, abandoned, which is a continuation of Ser. No. 352,761, Feb. 26, 1982, abandoned. This application Jun. 18, 1987, Ser. No. 65,072

Claims priority, application Japan, Mar. 9, 1981, 56-33562; Mar. 31, 1981, 56-47616

Int. Cl.[4] A61B *3/14*

U.S. Cl. 351—206 **34 Claims**



1. An eye fundus camera capable of selectively performing normal photography and fluorescein angiography comprising:

(a) photographic means for forming a photographic optical path and for photographing the fundus of the eye, said photographic means having a conjugate field stop to the fundus of the eye to be examined;

(b) illuminating means for forming an illuminating optical path and for illuminating the fundus of the eye, said illuminating means being provided with a conjugate ring slit to the front part of an eye to be examined with respect to an objective optical system confronting the eye;

(c) light selecting means cooperating with said photographic means for selecting a light forming a fluorescein image from among the light from the eye fundus;

(d) exciting means cooperating with said illuminating means for producing a light exciting fluorescein substance;

(e) a second field stop arranged in said illuminating optical path approximately conjugate with the eye fundus of the eye to be examined for reducing the illuminated area of the eye fundus; and

(f) means for making a diameter of the illuminated area of said second field stop smaller in connection with alteration from fluorescein angiography, with both said exciting means and said light selecting means in the optical path, to normal photography with both said exciting means and said light selecting means out of the optical path.

4,799,784
VISUAL VERTEX FINDER

Aran Safir, 3 Ellsworth Ave., Cambridge, Mass. 02139

Filed Jun. 23, 1986, Ser. No. 877,265

Int. Cl.[4] A61B *3/00, 3/10*

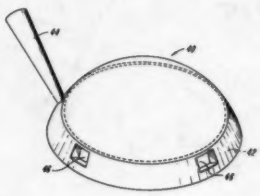
U.S. Cl. 351—212 **20 Claims**

7. A beam splitter for use in combination with a viewing instrument having an optical axis and a light source producing a collimated light beam coincident with the optical axis of the viewing instrument to locate a visual vertex of an eye fixated on the light source, a visual axis for the collimated light beam being defined between the fovea of the fixated eye and the light source wherein the visual vertex is the intersection point of the visual axis with the front corneal surface of the fixated eye, comprising:

an annular base portion for engagement with the front corneal surface of the fixated eye;

a curved mirror centrally disposed on said annular base portion distal to the front corneal surface of the fixated eye, and wherein said curved mirror is partially reflective and partially transmissive to the collimated light beam incident thereon;

said curved mirror and said base portion in combination defining an optical axis for said beam splitter, and wherein said curved mirror is structurally configured to cause the collimated light beam incident thereon to form a virtual image of the light source on the front corneal surface of the fixated eye at the visual vertex when said optical axis



of said beam splitter is coincident with the visual axis of the fixated eye; and

means for moving said beam splitter on the front corneal surface of the fixated eye to align said optical axis of said beam splitter with the visual axis of the fixated eye thereby causing

the collimated light beam to form the virtual image of the light source on the front corneal surface of the fixated eye at the visual vertex and wherein the virtual image of the light source is located via the viewing instrument.

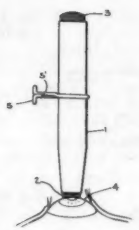
4,799,785
CORNEA CONTOUR MAPPING

Richard H. Keates, 264 N. Drexel Ave., Columbus, Ohio 43209, and Richard T. Schneider, 3550 N.W. 33rd Pl., Gainesville, Fla. 32605

Filed Oct. 17, 1986, Ser. No. 920,049

Int. Cl.[4] A61B *3/10, 5/10*

U.S. Cl. 351—212 **3 Claims**



1. An apparatus for mapping the surface area of the cornea which comprises: probe means comprising a bundle of cylindrical pins reciprocally movable with respect to one another and having a forward end thereof adapted to measure the surface contour of a cornea, said bundle having a circular cross-section of at least 10 mm in diameter; means for locking said bundle of pins in a fixed position with respect to one another after said one end of the cylindrical pins is adapted to the shape of the cornea; detecting means for ascertaining the relative position of the ends of the pins to one another at the forward end of the bundle of pins; memory means for storing the relative position of each end of said pins; and graphing means for depicting the contour of the cornea on a surface based on the data stored in said memory means so as to permit observation by an operator.

4,799,786

METHOD OF DIAMOND IDENTIFICATION

Donald L. Gerrard, West Ewell, England, assignor to The British Petroleum Company p.l.c., London, England

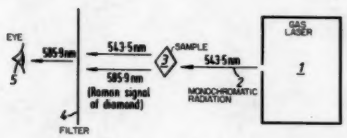
PCT No. PCT/GB86/00340, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07457, PCT Pub. Date Dec. 18, 1986

PCT Filed Jun. 12, 1986, Ser. No. 9,364

Claims priority, application United Kingdom, Jun. 13, 1985, 8514992

Int. Cl.[4] G01J 3/44; G01N 21/87

U.S. Cl. 356—30 4 Claims



1. A method for distinguishing between diamonds comprising the steps of:

(a) irradiating a gem to be distinguished with a beam of monochromatic laser radiation, the laser radiation being produced by a low powdered laser and having a wavelength in the range about 450 to 550 nanometers;

(b) passing any resultant scattered Raman radiation from said gem through an optical filter adapted to pass only scattered Raman radiation of wavelength characteristic of diamond and,

(c) detecting said filtered radiation by the eye of an observer thereby to enable identification of said gem as a diamond or otherwise.

4,799,787

OPTICAL FIBRE RADIATION PYROMETER

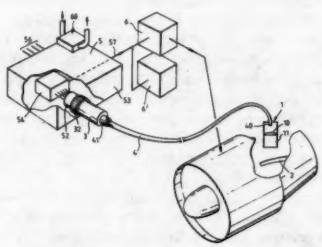
Ronald A. Mason, Southampton, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Nov. 25, 1987, Ser. No. 125,267

Claims priority, application United Kingdom, Dec. 10, 1986, 8629492

Int. Cl.[4] G01J 5/04, 5/08/5/14

U.S. Cl. 356—43 8 Claims



1. An optical pyrometer comprising: an optical radiation receiving head; a flexible fibre optic cable having one end coupled with said receiving head such that said cable transmits radiation received by said receiving head; an optical detector assembly fixed with the other end of said cable, said optical detector assembly including a first rigid casing, a first mateable electrical connector device on said casing, an optical radiation detector device and amplifier means within said casing, said amplifier means having an input connected with said optical radiation detector device and an output connected with said first electrical connector device; and a processing unit, said processing unit including a second rigid casing, a second electrical connector device on said second casing, electrical circuit means within said second casing, said circuit means having an input connected with said second electrical connector device, said circuit means being arranged to process the output of the optical detector assembly, and said second electrical connector device being adapted to mate and engage directly with the first electrical connector device such that said optical detector assembly can be connected with said processing unit without the interposition of any cable between the respective first and second casings.

4,799,788

PROCESS FOR MEASURING THE TEMPERATURE OF A BODY BY OPTICAL DETECTION AND MODULATED HEATING

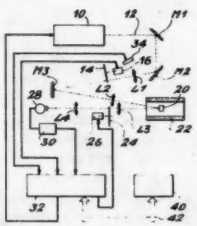
Olivier Berthet, Vanves; Jean-Jacques Greffet, Antony, and Yves Denayrolles, Le Vesinet, all of France, assignors to Electricite de France Service National, Paris and Ecole Centrale des Arts et Manufactures de Paris, Chatenay Malabry, both of, France

Filed Aug. 7, 1987, Ser. No. 82,549

Claims priority, application France, Aug. 8, 1986, 86 11542

Int. Cl.[4] G01J 5/06, 5/60

U.S. Cl. 356—45 3 Claims



3. A process for measuring by optical detection the temperature of a body, comprising the steps of:

producing a modulated heating of a zone of said body;

varying the intensity of said modulated heating;

detecting the thermal radiation coming from said zone and providing an electric signal having a continuous component and a modulated component wherein said modulated component varies in accordance with said variation in the intensity of said modulated heating and wherein said variation of said modulated component comprises a linear term and a quadratic term with respect to the intensity of the modulated heating;

forming a first ratio of said quadratic term with respect to the intensity of the modulated heating;

forming a first ratio of said quadratic term to said linear term wherein said first ratio results in a function dependent on the temperature of the body but independent of the emissivity of the body;

forming a second ratio by detecting said thermal radiation in a second wavelength range different from said first wavelength range to thereby form a first and a second ratio respectively;

forming a third ratio consisting of said first ratio divided by said second ratio wherein said third ratio provides a quantity which depends only on the temperature of said body; and

computing the second derivative of the luminance of a black body;

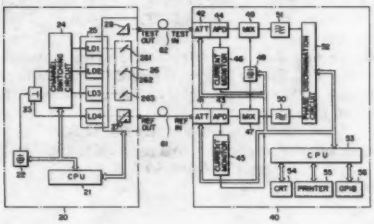
computing by inversion of said second derivative of said luminance, and the value of said third ratio, the temperature of said body.

4,799,789

CHROMATIC DISPERSION MEASURING SYSTEM FOR OPTICAL FIBERS

Takeshi Tsukamoto, Hadano; Takao Tanimoto, Sagamihara, and Hidetoshi Miyao, Yokohama, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Feb. 24, 1988, Ser. No. 159,888
Claims priority, application Japan, Feb. 27, 1987, 62-27436[U]; Mar. 9, 1987, 62-52130
Int. Cl.[4] G01N *21/84*
U.S. Cl. 356—73.1 25 Claims



1. A light signal transmission apparatus for measuring a chromatic dispersion of an optical fiber based on a baseband phase comparison method, said apparatus comprising:

n light source means for selectively generating optical signals having wavelengths corresponding to n wavelength points to be measured as measurement optical signals, one of said n light source means also serving to generate a reference optical signal;

modulation signal generating means for generating at least one modulation signal having a predetermined frequency;

first control signal generating means for designating said n light source means in a predetermined order in order to generate the measurement optical signals and the reference optical signal;

light source switching means, which is coupled between said first control signal generating means, said modulation signal generating means, and said n light source means, for selectively supplying the modulation signal to a specific one of said n light source means, which is designated by the first control signal to generate the measurement optical signal and to said light source means which also serves to generate the reference optical signal, or only to the light source which serves to generate both the measurement optical signal and the reference optical signal;

second control signal generating means for generating a second control signal having a predetermined synchronous relation with the first control signal; and

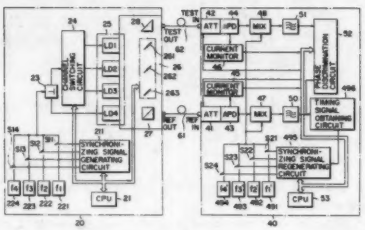
optical switch means, which has n optical signal inputs arranged in correspondence with said n light source means, a measurement optical signal output, and a reference optical signal output, for, in response to the second control signal from said second control signal generating means, commonly outputting, to the measurement optical signal output, the measurement optical signal which is output from the designated one of said n light source means and is selectively input to the n optical signal inputs, and outputting the reference optical signal generated by one of said n light source means to the reference optical signal output.

4,799,790

CHROMATIC DISPERSION MEASURING SYSTEM FOR OPTICAL FIBERS

Takeshi Tsukamoto, Hadano, and Takao Tanimoto, Sagamihara, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Feb. 24, 1988, Ser. No. 159,838
Claims priority, application Japan, Feb. 27, 1987, 62-44569
Int. Cl.[4] G01N *21/84*
U.S. Cl. 356—73.1 19 Claims



1. A light signal transmitter apparatus for measuring a chromatic dispersion of an optical fiber based on a baseband phase comparison method, said apparatus comprising:

light source means for selectively generating one of measurement optical signals having wavelengths corresponding to n wavelength points to be measured and a reference optical signal in a predetermined combination;

modulation signal generating means for generating at least one modulation signal having a predetermined frequency;

synchronizing signal generating means for generating a synchronizing signal having a predetermined frequency;

adding means, connected to said modulation signal generating means and said synchronizing signal generating means, for adding the synchronizing signal generated by said synchronizing signal generating means to the modulation signal generated by said modulation signal generating means;

first control signal generating means for designating the predetermined combination of one of the measurement optical signals and the reference optical signal;

light source switching means, which is coupled between said light source means, said adding means, and first control signal generating means, for selectively supplying the modulation signal added with the synchronizing signal to the light source means corresponding to the combination of one of the measurement optical signals and the reference optical signal designated in accordance with the first control signal;

second control signal generating means for generating a second control signal having a predetermined synchronous relation with the first control signal; and

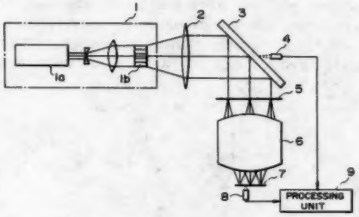
optical switch means, which has reference optical signal input and measurement optical signal inputs which are arranged in correspondence with said light source means, a measurement optical signal output, and a reference optical signal output, for, in response to the second control signal from said second control signal generating means, commonly outputting, to the measurement optical signal output, the measurement optical signal which is output from the designated one of said light source means and is selectively input to the measurement optical signal inputs, and outputting the reference optical signal from the reference optical signal input to the reference optical signal output.

4,799,791

ILLUMINANCE DISTRIBUTION MEASURING SYSTEM

Hiroshi Echizen; Masakatsu Ota, and Akiyoshi Suzuki, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 106,000, Oct. 7, 1987, abandoned, which is a continuation of Ser. No. 699,201, Feb. 7, 1985, abandoned. This application May 23, 1988, Ser. No. 198,587
Claims priority, application Japan, Feb. 13, 1984, 59-22892; Jan. 16, 1985, 60-5355
Int. Cl.[4] G01J 1/00
U.S. Cl. 356—121 20 Claims



1. An illuminance distribution measuring apparatus, comprising:

first detecting means for detecting illuminance at each portion of an area irradiated by a light beam emitted from a light source, said first detecting means being movable along the area irradiated;

second detecting means fixedly secured at a predetermined position relative to the light source and the area to be irradiated, said second detecting means receiving a portion of the light beam emitted from the light source to irradiate the area to be irradiated to detect unsteadiness of the light from the light source; and

processing means for receiving outputs from said first and second detecting means and processing the outputs to measure the illuminance distribution on the area irradiated.

4,799,792

METHOD TO TEST THE POLISHING OF A MIRROR AND SYSTEM TO USE THIS METHOD

Alian Bonneau, Auteuil, and Jacques Paseri, Le Plessis Robinson, both of France, assignors to Societe d'Etudes Techniques et d'Entreprises Generales - Sodeteg, Le Pelessis Robinson, France

Filed Jul. 21, 1987, Ser. No. 75,980
Claims priority, application France, Jul. 22, 1986, 86 10616
Int. Cl.[4] G01B 9/00
U.S. Cl. 356—124 22 Claims

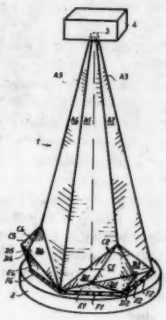
1. A method to test the polished surface of a mirror comprising:

placing said mirror on a support;

fixing said support at one end of a flexible shaped and/or folding chamber;

mounting a testing device at the other end of said flexible and/or folding chamber;

eliminating any residual air in said chamber;



then replacing said removed air by a fluid in which light is propagated homogeneously; and

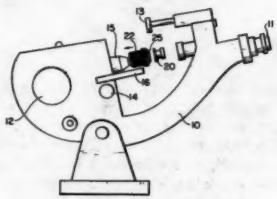
testing said mirror.

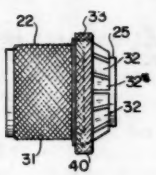
4,799,793

METHOD AND APPARATUS OF PLACING A LENS IN A TELESCOPIC LENS ASSEMBLY WHILE PROVIDING OPTICAL ALIGNMENT

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.

Filed Sep. 15, 1986, Ser. No. 906,985
Int. Cl.[4] G01B 9/00
U.S. Cl. 356—127 7 Claims





1. A method of providing spectacle correction on optical axis in a compound lens system by employing a lensometer having a lens stop assembly for positioning a lens on which measurements are to be made for aligning the lens in said compound lens system while employing said lensometer, comprising the seps of:

(a) placing said lens in a fixture to firmly hold the lens while allowing said lens to protrude from said fixture,

(b) placing said fixture and lens over said lens stop assembly of said lensometer,

(c) moving said compound lens system with respect to said lens to align the same along said axis to determine the proper position of said lens within said compound systems.

6. A collet assembly apparatus for holding a lens for assembly purposes, comprising:

a first tubular member section symmetrically disposed about an axis and having an opened top and bottom end, said member having an intermediate threaded peripheral section, with a series of surface slots directed from said opened top end and intersecting said threaded section to form a plurality of flanges between said slots with the outer ends of said flanges defining a spectacle lens accommodating aperture, a rotatably adjustable ring positioned over said threaded section and having a corresponding internal thread to allow said ring when adjusted to vary the spacing of said slots to thereby vary the diameter of said lens accommodating aperture to enable a spectacle lens emplaced within said aperture to be firmly grasped about the periphery thereof while allowing a predetermined portion of the lens to extend from said aperture.

4,799,794

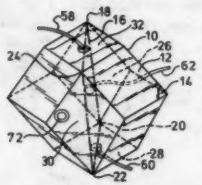
INTERIOR REFLECTIVE CHAMBER EMBODYING AN ORDERING PRINCIPAL FOR COLOR REFLECTORS THEREIN

Roy L. Myantt, 420 N. Hamilton, Ypsilanti, Mich. 48197

Filed Sep. 29, 1987, Ser. No. 102,119

Int. Cl.[4] G01N *21/03, 21/25*

U.S. Cl. 356—246 **21 Claims**



1. A chamber comprising a multifaceted rhombic dodecahedral interior wall, a plurality of the faces of the wall comprising reflective surfaces, the reflective surfaces each comprising distinct monochromatic reflective filters whereby distinct substantially monochromatic radiation is reflectable from each of said surfaces and wherein opposed surfaces are of primary and complementary radiative frequencies.

4,799,795

STATIONARY, ELECTRICALLY ALTERABLE, OPTICAL MASKING DEVICE AND SPECTROSCOPIC APPARATUS EMPLOYING SAME

William G. Fateley, Manhattan, Kans., assignor to D.O.M. Associates, Inc., Manhattan, Kans.

Continuation of Ser. No. 902,575, Sep. 2, 1986, abandoned, which is a continuation of Ser. No. 613,711, May 24, 1984, Pat. No. 4,615,619, which is a continuation-in-part of Ser. No. 590,999, Mar. 19, 1984, abandoned. This application Oct. 26, 1987, Ser. No. 115,639

The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.

Int. Cl.[4] G01F *1/01;* G01J *3/28*

U.S. Cl. 356—310 **10 Claims**

6. A spectrophotometer, comprising:

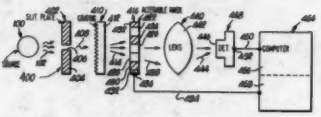
a source of radiation;

a stationary, fixedly mounted, electrooptical masking device including a body presenting a pair of opposed faces, zone-defining means carried by the body for dividing at least one of said faces into a plurality of discrete, selectively alterable zones;

means operably coupled with said body for selective, electrical alteration of each zone respectively between a condition where it is relatively transmissive for said radiation, and a condition where it is relatively opaque for said radiation,

said zone condition-altering means including means for successively and sequentially producing over the time of a single spectral analysis and in a predetermined fashion a number of different patterns of zones carried by the body which are rendered relatively transmissive and opaque, whereby different ones of said zones are predeterminedly rendered relatively transmissive and opaque at different times during said time of said single spectral analysis;

means for directing radiation from said source as continuous, unmodulated radiation onto a face of said masking device,



said zone condition-altering means being operable for passing of said radiation unmodulated through said zones when rendered relatively transmissive;

said radiation source and masking device being correlated such that the radiation from said source is of a wavelength which will pass unmodulated through the zones of said body when such zones are in said relatively transmissive condition;

detector means associated with said mask for successively and sequentially detecting certain of the radiation initially directed onto said one mask face during each predetermined mask pattern of relatively transmissive and opaque zones; and

means operably connected with said detector means for sucessively receiving and analyzing detected radiation information received from the detector means during each of said predetermined mask patterns, in order to provide a spectral analysis.

4,799,796

METHOD AND APPARATUS FOR MEASURING IMMUNOLOGICAL REACTION WITH THE AID OF PHASE-MODULATION OF LIGHT

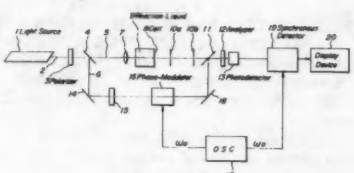
Toshimitsu Musha, Machida, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 941,107

Claims priority, application Japan, Dec. 20, 1985, 60-285819

Int. Cl.[4] G01N *33/50, 21/21, 21/51, 15/02*

U.S. Cl. 356—336 **24 Claims**



1. A method of measuring an immunological reaction comprising the steps of:

emitting a polarized light beam;

dividing the polarized light beam into first and second polarized light beams;

projecting the first polarized light beam to a reaction liquid containing at least an antigen and an antibody;

phase-modulating said second polarized light beam with a given phase-modulating angular frequency to produce a phase-modulated light beam;

introducing said phase-modulated light beam and light scattered by particulate substances in the reaction liquid and having a polarization component whose polarization plane differs from that of the first polarized light beam, onto a photodetector to produce an output signal; and

processing said output signal of the photodetector on the basis of said phase-modulating angular frequency to measure the antigen-antibody reaction in the reaction liquid.

4,799,797

COHERENCE MULTIPLEXING OF OPTICAL SENSORS

Raymond W. Huggins, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 17, 1987, Ser. No. 121,467
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—345 10 Claims

1. An optical sensor system, comprising:

a common optical bus;

one or more optical sources, each source having a coherence length;

a plurality of sensors, each sensor comprising a sensor interferometer formed in substrate, the sensor interferometer comprising a sensing arm and a reference arm, each arm comprising an optical waveguide having first and second ends, the sensor interferometer further comprising means for coupling radiation from an associated one of the sources into the first ends of the arms and means for coupling sensor modulated radiation from the second ends of the arms into the optical bus, the arms of each sensor interferometer (i) having an optical path length difference LS(i) that is greater than the coherence length of the associated source and that differs from the path length difference LS(j) of the sensor interferometer of each other sensor by an amount greater than the coherence length of the source associated with path length difference LS(i), each sensor further comprising means for varying the optical path length of the sensing arm based on a sensed input parameter; and

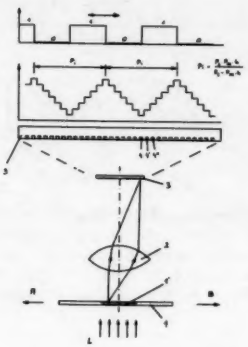
a detection subsystem coupled to receive the sensor modulated radiation from the optical bus, the detector subsystem comprising detector interferometer means for causing separate portions of the sensor modulated radiation, for each path length difference LS(i), to travel along first and second optical paths that have a path length difference LD(i) that differs from LS(i) by an amount not substantially greater than the coherence length of the source associated with path length difference LS(i), and for combining the sensor modulated radiation that has traveled along the first and second optical paths to produce an optical output signal having an intensity that varies as the sensed parameter of the associated sensor varies.

4,799,798

METHOD OF AND AN APPARATUS FOR AN OPTICAL MEASURING OF A POSITION

Karl J. Erb, Gossau, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Feb. 5, 1987, Ser. No. 11,314
Claims priority, application Switzerland, Feb. 18, 1986, 641/86
Int. Cl.[4] G01B 11/00
U.S. Cl. 356—374 7 Claims



1. A method of optically measuring the position between two elements, comprising:

forming a line grid of a photosensitive element having a plurality of photodiodes equidistantly spaced from each other and a corresponding plurality of digital switching elements each operative to generate signals from a respective one of said plurality of photodiodes, said photodiodes and digital switching elements being integrated on a common substrate;

displacing an optical scale having a predetermined line grid relative to said photosensitive element line grid to form a distance to be measured; and

projecting said optical scale onto said plurality of photodiodes such that the projected density of the lines of said scale differs from the line grid of said photosensitive element to generate an interference pattern representative of the distance between the two line grids.

4,799,799

DETERMINING INERT CONTENT IN COAL DUST/ROCK DUST MIXTURE

Michael J. Sapko, Finleyville, and Jack A. Ward, Jr., Oakmont, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 699,514, Feb. 6, 1985. This application Dec. 19, 1986, Ser. No. 943,347
Int. Cl.[4] G01N 21/55
U.S. Cl. 356—446 7 Claims

1. A method of determining the inert content in a coal dust and rock dust mixture comprising the steps of: providing a transparent window at an end of a probe; pressing the transparent window of the probe against the mixture;

directing an infrared light beam from inside of the probe onto the mixture through the transparent window such that a portion of the infrared light beam is reflected from the mixture;

detecting the concentration of the reflected light;

generating a signal indicative of the reflected light;

determining a normalized value (ϕ) for the signal generated according to the relationship

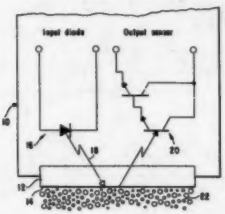
$$\phi=(\log i_c-\log i_{c0})/(\log i_{c100}-\log i_{c0})$$

where

i_{c0}=measured signal at 0% rock dust

i_{c100}=measured signal at 100% rock dust

i_c=measured signal of the mixture; and



correlating the normalized value to a predetermined relationship of ϕ to rock dust percentage to determine the rock dust content of the mixture wherein the correlating step includes the calculating of rock dust percentage (RD%) from the predetermined relationship.

$RD\%=100+30\log_e\phi$.

4,799,800

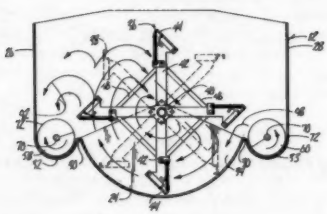
FEED MIXER

Dorland H. Schuler, Griswold, Iowa, assignor to Schuler MFG. & Equip. Co., Inc., Griswold, Iowa

Filed Oct. 28, 1986, Ser. No. 924,207

Int. Cl.[4] B01F *7/04*

U.S. Cl. 366—296 **13 Claims**



1. A feed mixing device, comprising:

a mixing chamber having forward and rearward end walls, a bottom wall and opposite side walls;

first and second rotatable mixing reels, each including an axle and a plurality of elongated mixing paddles operatively connected to the axle;

said reels being positioned within said chamber in an end-to-end relationship;

means for moving the feed longitudinally within said mixing chamber; and

means for rotating said first and second reels in opposite direction such that each reel moves the feed towards opposite side walls of the mixing chamber and thereby substantially maintaining the center of gravity of the feed being mixed midway between the side walls of said chamber; and a discharge port in said mixing chamber for discharging mixed feed from said chamber.

4,799,801

MIXING DEVICE FOR PASTY MULTICOMPONENT MATERIALS

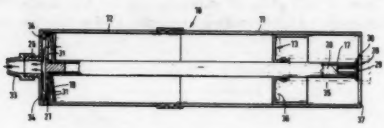
Werner Brüning, Engelskirchen, Fed. Rep. of Germany, assignor to Alfred Fischbach KG Kunststoff-SpritzguBwerk, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 169,248

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708803

Int. Cl.[4] B01F *15/02*

U.S. Cl. 366—255 **10 Claims**



1. A mixing device for pasty multicomponent materials comprising a tubular cartridge including first and second tubular portions each adapted to house an individual pasty material, mixing means axially displaceable in said tubular cartridge by a rod for admixing the individual pasty materials, said mixing means being a pair of relatively rotatable disks, means for preventing rotation of a first of said disks, aperture means in said disks, a second of said disks being connected to and rotatable by said rod, a piston in said tubular cartridge movable from a first position remote from an outlet end of said tubular cartridge toward a second position adjacent said outlet end whereby admixed pasty material passes through said disk aperture means incident to exiting said tubular cartridge at said outlet end, and said piston is mounted in sliding relationship to said rod.

4,799,802

DRAWER GUIDE

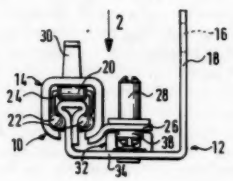
Horst Lautenschlager, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager GmbH & Co., KG, Reinheim, Fed. Rep. of Germany

Filed May 16, 1988, Ser. No. 194,451

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716923

Int. Cl.[4] F16C *29/04*

U.S. Cl. 384—19 **9 Claims**



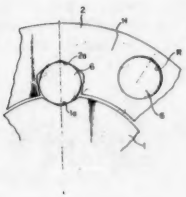
1. A drawer guide comprising: a shaped guide rail to be fastened to a carcase wall of a cabinet, a runner rail in the form of an inverted channel to be fastened to a drawer of the cabinet and engaged from below by the guide rail, tracks defined between the two rails, roller bearings rolling on said tracks in case of a longitudinal displacement of the runner rail relative to the guide rail, said guide rail having a substantially horizontally disposed web laterally beside the runner rail, a resiliently deformable brake element on said web, said runner rail having a lateral extension, and a projection on said extension and adapted to run onto the braking element to brake the runner rail.

4,799,803

BALL SPLINE LINEAR MOTION ROLLING GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed May 9, 1988, Ser. No. 191,915
Claims priority, application Japan, Sep. 16, 1987, 62-231514
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—43 **3 Claims**



1. A ball spline linear motion rolling guide unit comprising:
a ball spline shaft (1) on which a plurality of first track grooves (1a) are formed in a longitudinal direction at predetermined positions on an outer peripheral surface;
a hollow outer cylinder (2) having a hollow hole into which the ball spline shaft (1) is slidably inserted;
a plurality of second track grooves (2a) formed on an inner peripheral surface of said hollow hole so as to face the first track grooves (1a) of the ball spline shaft (1); and
a number of balls (6) which are inserted between the first and second track grooves (1a and 2a),
wherein a center of an arc of each of the second track grooves (2a) formed on the outer cylinder (2) is slightly deviated to the side of the ball spline shaft (1) from a center of the ball (6) inserted between the first and second track grooves (1a and 2a), an entrance portion of the second track groove (2a) is formed by an arc surface having a diameter (d_1) which is slightly larger than a diameter (d) of the ball (6), thereby constructing a supporting portion (2c) of the balls (6), and an almost V-shaped notched groove is formed in a bottom portion of each of the first and second track grooves (1a and 2a), thereby forming a groove having an almost arrowhead-shaped cross section, and the portion near the edge of said arrowhead-shaped grooves serves as the track surface (2b).

4,799,804

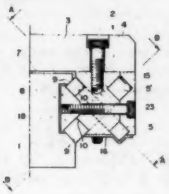
FOUR TRACK-TYPE ENDLESS RECTILINEAR MOTION GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 178,028
Claims priority, application Japan, Dec. 28, 1987, 62-330196
Int. Cl.[4] F16C *31/06*
U.S. Cl. 384—44 **4 Claims**

1. A four track-type rectilinear motion guide unit comprising a track rail member having a generally I-shaped cross section, a slide unit having an inner recess having an inverted U-shaped cross section and slidably straddling said track rail with said inner recess, and a plurality of cylindrical rollers arranged in a parallel fashion between the track surfaces of said track rail and the track surfaces of said slide unit,

said track rail member having, on each of the opposing elongated side walls, longitudinally extending recessed groove with inclined surfaces being formed along the laterally opposing edge portions thereof so as to form a pair of lower and upper rail-side trackway surfaces, while on the wall surface of the inner recess of said slide unit and facing said rail-side trackway surfaces are formed a pair of lower and upper slide-unit side trackway surfaces so that said facing two pairs together of the trackway surfaces form lower and upper load-carrying two trackways on each of the opposing wall surfaces of the inner recess of the slide unit, totalling four trackways in all, which form portions of endless circulation passages provided in said slide unit, the two endless circulation passages provided in each of the opposing sides of the slide unit being so arranged, as seen in a cross section thereof, that their longitudinal axes cross each other at right angles, while the two endless circulation passages differ in size from each other thereby providing a longer endless circulation passage having a larger cross section and a shorter endless circulation passage having a smaller cross section, which are arranged such that the longer circulation passage encompasses the shorter circulation passages within the loop but the lengths of the load-carrying trackway surfaces of said two circulation passages are the same.

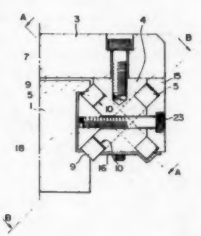


4,799,805

FOUR TRACK-TYPE ENDLESS RECTILINEAR MOTION GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co. Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 178,027
Claims priority, application Japan, Dec. 28, 1987, 62-330195
Int. Cl.[4] F16C *31/06*
U.S. Cl. 384—44 **3 Claims**



1. A four track-type endless rectilinear motion guide unit comprising a track rail member having a generally I-shaped cross section, a slide unit having an inner recess having an inverted U-shaped cross section and slidably straddling with its recess on said track rail member, and a plurality of cylindrical rollers arranged in parallel with one another between the track surfaces of said track rail member and the track surfaces of said slide unit,

said track rail member having, on each of the opposing elongated sidewalls, longitudinally extending groove with inclined surfaces being formed along the laterally opposing edge portions thereof so as to form lower and upper rail-side trackway surfaces, while on each of the opposing surfaces of the inner recess of said slide unit are formed lower and upper slide-unit side trackway surfaces, facing

said lower and upper rail-side trackway surfaces respectively so that corresponding lower and upper trackway surfaces of the track rail member and the slide unit, respectively, form lower and upper load-carrying trackways between the track rail member and the slide unit, totalling four trackways in all, which form portions of endless circulation passages provided in said slide unit, the two endless circulation passages provided in each side of the slide unit being so arranged, as seen in a cross section thereof, that their longitudinal axes cross each other at right angles, while the longitudinal lengths of the two endless circulation passages differ from each other such that the longer circulation passage encompasses the shorter circulation passage within the loop, but the lengths of the load-carrying trackway surfaces of said two circulation passages are the same.

4,799,806

MINIATURE LINEAR GUIDE APPARATUS

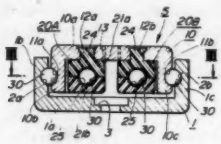
Takahiro Seki, Machashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1987, Ser. No. 124,883

Claims priority, application Japan, Nov. 28, 1986, 61-183096[U]; Jan. 19, 1987, 62-5762[U]

Int. Cl.[4] F16C *29/06*

U.S. Cl. 384—45 **4 Claims**



1. A miniature linear guide apparatus comprising:

a guide rail extending in a longitudinal direction and having a U-shaped cross section, said U-shaped guide rail having a bottom horizontal surface and vertical walls extending upward therefrom forming a U-shaped recess, said vertical walls having ball rolling grooves formed respectively on inner surfaces thereof so that said ball rolling grooves oppose each other; and

a slider accommodated in said U-shaped recess of said guide rail, said slider comprising:

(a) a race member having an inverted U-shaped cross section, said inverted U-shaped race member having a top horizontal surface and vertical walls extending downward therefrom forming a U-shaped recess, and having ball rolling grooves respectively formed in outer surfaces of said vertical side walls, so that said ball rolling grooves of said guide rail respectively oppose corresponding ball rolling grooves of said race member; and

(b) first and second ball guide members accommodated in said U-shaped recess of said race member and respectively having ball rolling passages formed therein in parallel relationship to each other, each of said ball rolling passages being in communication with a corresponding ball rolling groove of said guide rail and said ball rolling groove of said race member;

multiple balls inserted rollably in said pairs of said ball rolling grooves of said guide rail and said race member, and in said ball rolling passages of said first and second ball guide members,

protruding portions formed on said first and second ball guide members at opposite longitudinal ends respectively protruding into and towards one of said ball rolling grooves of said guide rail, each of said protruding portions being formed with a curved ball passage having one end being in communication with one of said ball rolling grooves of said guide rail and said race member and having the other end being in communication with a ball passage of said first or second ball guide member,

a plurality of positioning protrusions provided on selected one of said race member and said first ball guide member and one of said race member and said second ball guide member, and

a plurality of positioning holes formed in the other of said first member and said race member and the other of said race member and said second ball guide member, thereby to secure said race member and said first and second ball guide members integrally by fitting said plurality of positioning protrusions into said positioning holes.

4,799,807

ROLLING BEARING WITH ROLLING RETAINERS

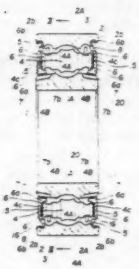
Kazuo Kuroiwa, 750-186, Shirane-cho, Yokahama-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 108,778, Oct. 15, 1987. This application Jan. 26, 1988, Ser. No. 150,547

Claims priority, application Japan, Oct. 15, 1986, 61-243071; Sep. 10, 1987, 62-226869; Nov. 19, 1987, 62-292782

Int. Cl.[4] F16C *33/10, 19/20, 19/40*

U.S. Cl. 384—462 **11 Claims**



1. A rolling bearing in which a plurality of rolling members are interposed between an outer race and an inner race, further comprising:

a plurality of generally cylindrical rolling retainers, one disposed between each adjacent pair of the rolling members to keep them apart, each comprising a pair of annular grooves provided adjacent to either axial end thereof and a pair of circular flanges provided at either axial end thereof;

a pair of cover members, one located at each axial end of the rolling bearing and mounted to one of the two races to define a support rail coaxial with the rolling bearing, each of the support rails having a circumferential surface on the one radial side thereof on which the rolling retainers roll at their circular flanges;

a pair of free rings, each having a circumferential surface on the other radial side thereof on which the rolling retainers roll at their annular grooves; and

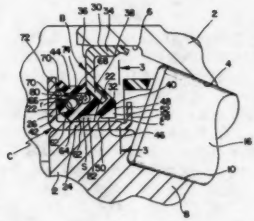
a lubricant ejection hole extending in an axial end portion of at least one of the rolling retainers from an opening in an axial end thereof to another opening in an outer circumferential surface thereof.

4,799,808

COMPACT SEAL

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Continuation-in-part of Ser. No. 79,175, Jul. 29, 1987, which is a continuation-in-part of Ser. No. 811,657, Dec. 19, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 124,510
Int. Cl.[4] F16C *33/78*
U.S. Cl. 384—481 20 Claims



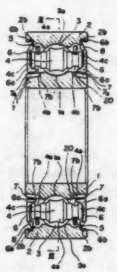
1. In combination with a sealing surface that exists around an axis of rotation and has a generally axially directed portion and a generally radially directed portion, a seal for establishing a barrier with the sealing surface so as to isolate a region generally between two components, one of which carries the seal and the other the sealing surface, when relative rotation about the axis of rotation exists between the two components, said seal comprising a labyrinth having a first face presented toward, yet spaced from the axially directed portion of the sealing surface and a second face presented toward the isolated region; a first dirt lip extended toward and bearing against the axially directed portion of the sealing surface; and a second dirt lip extended toward and bearing against the generally radially directed portion of the sealing surface, the first dirt lip being located between the labyrinth and the second dirt lip.

4,799,809

ROLLING BEARING WITH ROLLING RETAINER MEMBERS

Kazuo Kuroiwa, 750-186, Shirane-cho, Asahi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Oct. 15, 1987, Ser. No. 108,778
Claims priority, application Japan, Oct. 15, 1986, 61-243071
Int. Cl.[4] F16C *19/20, 19/40, 33/10*
U.S. Cl. 384—522 10 Claims



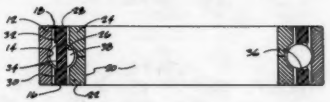
1. A rolling bearing, comprising:
(a) an inner race member;
(b) an outer race member;
(c) a plurality of rolling members disposed between said inner race member and said outer race member and rotatably supporting said inner race member and said outer race member relative to one another;
(d) a plurality of generally cylindrical rolling retainer members, one disposed between each adjacent pair of said rolling members, and each rolling on both of its said pair of adjacent rolling members and keeping them apart, each comprising:
(d1) an axially central rolling portion, in rolling contact with both of said pair of adjacent rolling members;
(d2) a pair of circumferential grooves, one proximate to each of its axial ends; and:
(d3) a pair of disk shaped end portions, one proximate to each of its axial ends;
(e) a pair of free rings, one at each axial end of said rolling bearing, and coaxial therewith; and:
(f) a pair of cover members, one at each axial end of said rolling bearing, and each defining a support rail coaxial with said rolling bearing and being mounted to one of said race members;
(g) said rolling retainer members each rolling on one radial side of said support rails by their disk shaped end portions, and on the other radial side of said free rings by their circumferential grooves into which said free rings are engaged;
(h) the central rolling portion of each of said rolling retaining members being concaved facing outwards and having a radius of curvature in a longitudinal direction which is less than the radii of curvature of the adjacent pair of said rolling members in the longitudinal direction.

4,799,810

VERY HIGH SPEED MARGINALLY LUBRICATED BALL THRUST BEARING

Robert B. Gilbert, Phoenix, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 936,853, Dec. 2, 1986, Pat. No. 4,729,154.
This application Aug. 26, 1987, Ser. No. 89,703
Int. Cl.[4] F16C *33/44*
U.S. Cl. 384—606 14 Claims



1. A very high speed ball thrust bearing, said bearing comprising:
a radially inner ball race member, and a radially outer annular ball race member spaced radially outwardly of said inner ball race member, each said ball race member defining a respective annular ball race groove confronting the other ball race member, and each ball race member being fabricated of bearing quality steel;
means for operation in the range of DN numbers 5×10^5 and above, where D is the bore diameter of the bearing in millimeters and N is the design operating speed of the bearing in rotations per minute, while said bearing is only marginally lubricated in operation by liquid jet engine fuel,
said means comprising a plurality of like ceramic ball members captively disposed in both said ball race grooves radially between and spacing apart said ball race members and in rolling contact with both to provide low friction relative rotation thereof;
said means further comprising an annular separator member interposing radially between said ball race members and defining a matching plurality of circumferentially spaced apart ball-receiving openings therethrough, each of said ball-receiving openings receiving a respective one of said plurality of ball members, said separator member compris-

ing a selected weight percent greater than zero percent of solid lubricant therein.

4,799,811

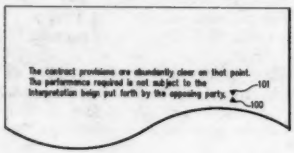
AUTOMATIC RELOCATE ON CONTINUATION OF DOCUMENT PLAYOUT

James L. Beck, Versailles; Marguerite H. Doyle, Lexington; Roger W. Early, Lexington; Terrance W. Ringle, Lexington, and David R. Smith, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1986, Ser. No. 876,633

Int. Cl.[4] B41J *5/30*

U.S. Cl. 400—279 **4 Claims**


The contract provisions are abundantly clear on that point.
The performance required is not subject to the
interpretation being put forth by the opposing party.
101
100

4. An electronic typewriter comprising:

operator entry input means;

print point positioning means;

first means to store data representing the position of the print point at the end of the printed text;

second means responsive to inputs from said operator entry means to operate said print point positioning means to bring said print point into text prior to said print point position at the end of the printed text;

third means, including logic means responsive to said first means to operate said print point positioning means to return the print point to the location of the print point at the end of the printed text; and

means including logic means responsive to a signal from said operator entry means, to respond to an operator entry to print by operating said third means to return to the location of the print point position at the end of the printed text, prior to printing.

4,799,812

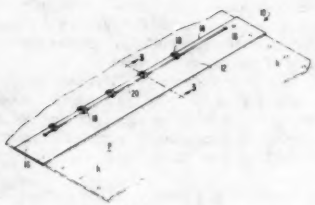
COMPUTER PAGE PLACE MARKER

Amparo A. Warwick, 47 Beechwood Dr., Waldorf, Md. 20601

Continuation of Ser. No. 829,197, Feb. 14, 1986, abandoned. This application Feb. 12, 1988, Ser. No. 155,543

Int. Cl.[4] B41J *11/26, 11/64*

U.S. Cl. 400—616 **7 Claims**



1. A place marker for a printed computer page having vertically positioned drive holes located adjacent opposite margins of the page, said place marker being characterized by:

a flexible, elongated marker member having at least one straight longitudinal marking edge, said flexible elongated marker member including at least two raised projections extending from the underside of said member;

said two raised projections being located adjacent one end of said elongated marker member and positioned in-line and in a direction perpendicular to said straight longitudinal marking edge at the said one end of said member and spaced at a distance corresponding to a distance between ones of said vertically positioned drive holes on one of said opposite sides of said printed computer page;

whereby, in use, said raised projections are placed in said drive holes of said printed computer page at specific locations on said page and said straight longitudinal marking edge is used to locate specific lines on said page.

4,799,813

COUPLING, ESPECIALLY FOR AN APPARATUS FOR FEEDING RECORDING CARRIERS TO THE PLATEN OF AN OFFICE MACHINE AND APPARATUS WITH SUCH COUPLINGS

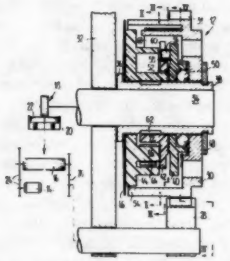
Rene Steinmetz, Uetikon am See, Switzerland, assignor to Rutishauser Data AG, Stafa, Switzerland

Filed Nov. 18, 1986, Ser. No. 932,103

Claims priority, application Switzerland, Nov. 19, 1985, 04933/85

Int. Cl.[4] B41J *11/58, 13/10*

U.S. Cl. 400—629 **14 Claims**



1. A coupling apparatus for operation between a platen of a printing device rotatable in forward and reverse directions and a material recording medium carrier of the type having a magazine and a separating device for separating individual recording medium from a stack of media in the magazine, the apparatus comprising a gear means for connection to a rotary output riginating with the platen so as to be rotatable in the same sense as the platen, an output shaft for connection to the separating device, means for transmitting rotation of said gear means to said output shaft, said transmitting means including first disc means having starting means and entrainment means spaced apart from each other by a predetermined rotary angle, said transmitting means further including first movable driver means connected with said gear means and engageable with said starting means and said entrainment means for transmitting rotary motion from said gear means to said first disc means upon rotation of said gear means in the forward direction, said first disc means including second movable driver means for transmitting rotary motion thereof to said shaft with said first driver means being in engagement with said entrainment means, said transmitting means further including shifting means operable upon rotation of said gear means in a reverse direction to move said first driver means out of driving engagement with either one of said starting means or said entrainment means, said transmitting means further including a locking means engageable by said first driver means so as to be rotatable about said shaft in a sense corresponding to the rotation of said gear means and having means for disengaging from driving engagement with said first driving means upon rotation of said gear means in a reverse direction and for rotating said locking means upon reverse rotation of said gear means through an angle that exceeds said predetermined angle so that

said first driver means will be prevented from driving engagement with said first disc means; said second driver means including a latch member movably carried by said first disc means and drivingly engaging said shaft upon forward rotation of said first disc means with said first driver means being in engagement with said entrainment means, said first disc means including at least two cam surface means, each said cam surface means having a forward steep portion and a rearward sloping portion relative to said direction of rotation said forward steep portions defining said starting means and said entrainment means, respectively, and said rearward sloping portion defining said shifting means.

4,799,814

PRINTER PAPER BAIL DEVICE

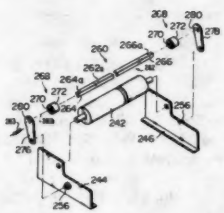
Toshimitsu Okubo, Shibata; Mamoru Takezawa, Yokohama; Mitsuyoshi Satoh, Shibata, and Kazuhiro Suzuki, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1986, Ser. No. 839,046

Claims priority, application Japan, Mar. 12, 1985, 60-49148; Mar. 12, 1985, 60-49149; Mar. 13, 1985, 60-49875; Mar. 13, 1985, 60-49876; Mar. 13, 1985, 60-49877; Apr. 3, 1985, 60-49824; Apr. 19, 1985, 60-84102; Jun. 27, 1985, 60-141406

Int. Cl.[4] B41J *13/20*

U.S. Cl. 400—639.1 **8 Claims**



1. A paper bail in a printer having a platen, comprising:
two bail levers movably mounted on said printer;
an elongate bail plate formed as a flat metal sheet having a substantially angle shaped section, angled shaped opposite ends of said bail plate fitting in correspondingly shaped slots of said bail levers;
at least one bail roller including bail roller mounting means cooperating with said angle-shaped section for mounting said bail roller on said bail plate; and
means for biasing said bail plate towards said platen, whereby said bail levers move in unison.

4,799,815

LIQUID DISPENSING SWAB APPLICATOR SYSTEM

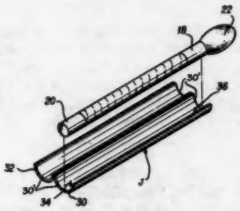
William A. Barabino, North Reading, and Raymond S. Dean, Lynn, both of Mass., assignors to Triad Direct Incorporated, Placentia, Calif.

Filed Aug. 17, 1987, Ser. No. 85,771

Int. Cl.[4] A61M *35/00*

U.S. Cl. 401—132 **2 Claims**

1. A liquid dispensing swab applicator system for dispensing a liquid to a surface comprising:
a hollow applicator shaft containing a liquid therein,
said shaft having two ends hermetically sealed and bounding a medial area,
said liquid normally separated from both said ends and retained within the medial area of said shaft by respective air pockets within said shaft adjacent said two ends,
an absorbent tip mounted upon one said end of said shaft for externally receiving said liquid contained within said shaft,
elongated release means comprising a pair of hingedly joined substantially curved members having opposite ends linearly spaced apart a distance no less than the distance between said air pockets,
a puncturing element adjacent each said end of one said release means member, and
said pair of release members surroundable about said shaft with said puncturing elements juxtaposed those portions of said shaft ends containing said air pockets, whereby



closing of said pair of release members with said shaft therebetween simultaneously forces said puncturing elements to pierce said shaft to provide openings therethrough to permit said liquid to migrate upon the external periphery of said shaft to said absorbent tip.

4,799,816

CONNECTION DEVICE FOR A GUIDE LINE OF AN UNDERSEA INSTALLATION

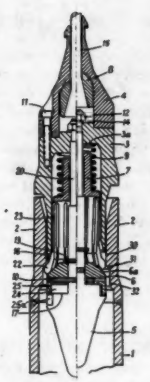
Alain Lechon, and Yves Le Luel, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed May 19, 1987, Ser. No. 52,235

Claims priority, application France, May 23, 1986, 86 07370

Int. Cl.[4] F16D *9/00*

U.S. Cl. 403—2 **8 Claims**



1. A disconnectable connection device for a guide line connecting a floating support to an undersea installation having a guide post sleeve, including in combination:
a connector body having a connection to said guide line and having an axially extending body chamber;
a rod carried by said body within said body chamber in axial relation thereto;
a locking jacket supported by said rod within said chamber;
resilient finger blades carried by said jacket and provided with locking fingers at the ends of said resilient blades;
a slidable ring carried by said rod below said jacket, said ring

having an external conical divergent face adjacent said locking fingers;

said guide post sleeve having an internal conical diverging face opposed to said conical face on said ring; said divergent faces on said ring and on said sleeve providing a space for receiving and housing said locking fingers when said connector body, rod, and jacket are in locked position in said guide post sleeve;

a releasable securing means for retaining said ring in locking position on said rod;

said conical faces on said ring and on said sleeve being movable away from each other for freeing said fingers from the space between said conical faces when said securing means is released for opening a passage for said fingers which, upon being so freed, cause the disconnection of the connector from the sleeve.

4,799,817

DOUBLE HOOKES JOINT

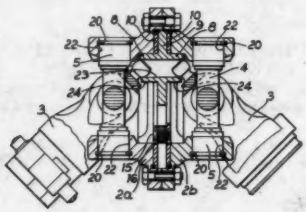
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Fed. Rep. of Germany

Filed Oct. 14, 1987, Ser. No. 108,715

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1986, 3636194

Int. Cl.[4] F16D 3/00

U.S. Cl. 403—57 **10 Claims**



1. A wide angle double Hookes joint comprising a double inner yoke; two outer yokes which are each pivotally connected to the inner yoke by a respective cross member, each cross member comprising a first pair of trunnions received in bearings in yoke arms of the outer yoke and a second pair of trunnions received in bearings in yoke arms of the inner yoke; a guide member having bearing means engaging said outer yokes to guide them to provide homokinetic torque transmission, said guide member being mounted in the inner yoke for radial movement relative to the axis of rotation thereof; a pair of guide plates in the inner yoke between which said guide member is radially movable with said bearing means engaged within identical radially extending slots in said guide plates, and said guide plates being rotatable about the axis of rotation of the inner yoke.

4,799,818

SYSTEM FOR MOUNTING AN ITEM TO A POST

Michael J. Sudimak, Shavertown, and Robert J. Cohn, Dallas, both of Pa., assignors to InterMetro Industries Corp., Wilkes-Barre, Pa.

Filed Mar. 23, 1987, Ser. No. 28,731

Int. Cl.[4] F16B 7/10

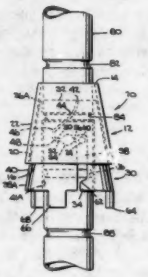
U.S. Cl. 403—107 **12 Claims**

1. A system for securing a member to a vertical column having outer surface, said system comprising:

a collar having an outer surface, formed to be associated with the member, and a frusto-conical inner surface;

an engagement pin mounted on said inner surface of said collar and extending inwardly therefrom; and

a sleeve having a frusto-conical outer surface formed to be rotatably mounted within said collar in mating engagement with said inner surface of said the outer surface of the vertical column thereby to engage the vertical column, said sleeve having a collapsible slit extending from its top to its base and being formed to receive said engagement pin in a locked position wherein said collar fits in



tight engagement on said sleeve closing said slit, and an unlocked position wherein said collar fits loosely on said sleeve permitting said slit to remain in an open relaxed configuration.

4,799,819

CONNECTOR FOR PROFILED STRUCTURAL MEMBERS

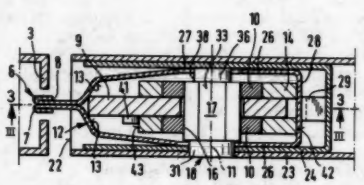
Hellmuth Swoboda, Tenniken, Switzerland, assignor to Connec AG Systembau-Technik, Zug, Switzerland

Filed Mar. 9, 1987, Ser. No. 23,654

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1986, 3607849

Int. Cl.[4] F16B 7/04

U.S. Cl. 403—252 **68 Claims**



1. A connector for separably securing at least one flange of a profiled member to a second member having an open front side adjacent the flange of the profiled member and a sidewall provided with a hole, comprising a support including a housing insertable into and removable from said second member by way of said front side; retaining means including at lest one retaining member disposed in said housing and movable between a first position of at least partial overlap with the one flange and a second position out of register with the one flange as well as back and forth between an extended position out of contact with and a retracted position of engagement with the one flange; an actuator rotatably mounted in said housing; displacing means for effecting a movement of said retaining member to said first position in response to rotation of said actuator; motion transmitting means interposed between said actuator and said retaining member for effecting a movement of said retaining member, in the first position of said retaining member, to said retracted position in response to rotation of said actuator, said motion transmitting means and said displacing means being disposed in said housing; and means for rotating said actuator relative to said second member and said

housing, comprising a shaft surrounded by said actuator and having an end portion in the hole of the sidewall of the second member, said shaft further having a coupling portion in torque transmitting engagement with said actuator.

4,799,820

ROAD-BUILDING MACHINE

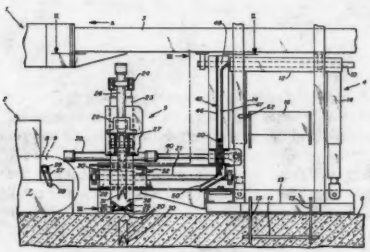
Heinrich Laeuppi, Graenichen, and Bruno Fedrizzi, Winkel, both of Switzerland, assignors to Erhard Thoma, Gartringen, Fed. Rep. of Germany

Filed Apr. 3, 1987, Ser. No. 34,798

Claims priority, application Switzerland, Apr. 4, 1986, 1335/86

Int. Cl.[4] E01C *23/04*

U.S. Cl. 404—100 **7 Claims**



1. Road-building machine (1) having a support (3) and a device (4) that is longitudinally movable along the support (3) for inserting cross studs (11) that are oriented parallel to the direction of motion of the machine (1) in positions for cross joints in a freshly-laid road covering (6) of concrete, characterized in that the machine (1) has, additionally, a device (5) carried by the machine for inserting longitudinal studs (20) that are oriented perpendicular to the direction of motion, in the position for longitudinal joints in the road covering (6), including means for synchronizing the cycle of device (5) with that of device (4) comprising first starting means for starting a cycle of the device (5) each time the machine (1) has traveled a predetermined distance, the cycles of device (5) continuing until a cross joint is reached, and second starting means for starting a cycle of device (4) when a cross joint is reached which second means interrupts the operation of device (5) and also generates a reference signal for the subsequent cycles of the device (5) so as to ensure placement of the longitudinal studs at predetermined spaced intervals from each other and the cross studs.

4,799,821

METHOD AND APPARATUS FOR CONTAINMENT AND/OR DIRECTING THE FLOW OF SPILLED HAZARDOUS LIQUIDS

John C. Brodersen, 1894 Meadowridge Rd., Prescott, Ariz. 86301

Filed Jul. 31, 1987, Ser. No. 79,950

Int. Cl.[4] E02B *7/00*

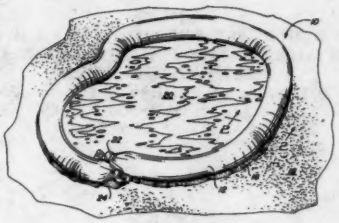
U.S. Cl. 405—115 **14 Claims**

1. A temporary emergency dike for restraining flow of a liquid along a surface upon which fluid has been or may be spilled, said dike comprising in combination:

(a) elongated means for contacting a strip of the suface, said contacting means being sufficiently pliable to conform with perturbations and undulations of the surface to restrain the flow of fluid between the surface and said dike;

(b) elongated means for extending above the surface, said elongated extending means, in combination with said elongated contacting means, defining an elongated envelope for receiving and retaining a quantity of water extending above and along the surface;

(c) means for introducing the water into said envelope; and



(d) means for manually knotting opposed ends of said envelope to retain the water introduced therein.

4,799,822

PROFILE ELEMENTS, PARTICULARLY FOR SUPPLY AND/OR REMOVAL OF SUBSTANCES FROM ENVIRONMENTAL AND/OR FLOW MATERIAL

Erich Wintermantel, Jahnallee 41,5300, Bonn 2, and Oswald Landwehr, Meckenheim, both of Fed. Rep. of Germany, assignors to Erich Wintermantel, Fed. Rep. of Germany

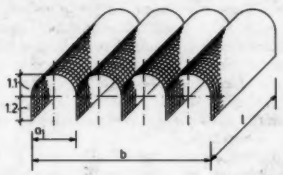
PCT No. PCT/EP86/00031, § 371 Date Sep. 2, 1986, § 102(e) Date Sep. 2, 1986, PCT Pub. No. WO86/04211, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 17, 1986, Ser. No. 912,602

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501748

Int. Cl.[4] E02B *13/00*; A01G *25/00*

U.S. Cl. 405—46 **13 Claims**



7. Profile elements of the type employed for supply of fluid substances to or removal of fluid substances from granulated, fibrous, or crumbly soil-like material in an environment surrounding the profile elements comprising:

boundary walls shaped to define a multi-tubular construction of tubes integrally connected side-by-side in longitudinal array so as to have at least a portion of the walls common to adjacent ones of said tubes, said walls being formed from an apertured mesh-like fabric enabling fluid communication between the tube interiors and the surrounding environment.

8. A process of supplying fluid substances to or removal of fluid substances from granulated, fibrous, or crumbly soil-like material by use of profile elements that include a plurality of spaced apart webs and associated boundary walls that integrally connect the webs and are supported upon the webs so as to define a plurality of longitudinally arrayed side-by-side channels separated by respective ones of the webs, with each said web constituting a common side wall for adjacent channels, and with the boundary walls being shaped so as to provide an enlarged surface area as compared with planar walls extending over an equivalent base area; with the webs and the boundary walls being formed of an apertured mesh-like fabric to enable fluid communication both between the adjacent

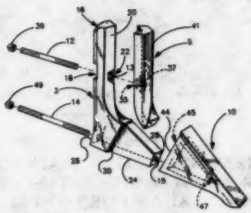
channels and with the surrounding environment, comprising the step of flowing said fluid substances through said profile elements.

4,799,823

PLOW WITH READILY REPLACEABLE WEAR PARTS ESPECIALLY ADAPTED FOR USE IN A VIBRATORY CABLE LAYING MACHINE

Thomas D. Williams, Star Rte., Hwy. 39 S., Aurora, Mo. 65605

Filed Jun. 18, 1987, Ser. No. 63,427
Int. Cl.[4] A01B *3/64, 23/02;* F16L *1/02*
U.S. Cl. 405—180 **25 Claims**



1. In a cable laying machine that includes a vehicle having a controllable arm to which a plow shank may be attached for ripping a trough in the ground and having a cable dispensing assembly that includes a spool of cable and a cable feed tube attached to said plow shank for laying the cable in the ground, the improvement comprising:

a nose/shank weldment including a front surface, a back surface having a recess and an exposed lower portion, a tapered nose, a shank stud borehole aligned with said recess and extending substantially longitudinally through said nose/shank weldment, and a point stud borehole aligned with said exposed lower back portion and extending substantially longitudinally through said tapered nose, said nose/shank weldment being attached to said shank;

a replaceable shank guard adapted to engage the front surface of said nose/shank weldment, said shank guard including a threaded passage substantially aligned with said shank stud borehole;

a shank stud for securing said shank guard to said nose/-shank weldment, said shank stud passing through said shank stud borehole and engaging said shank guard threaded passage such that an end of said shank stud is accessible through said recess;

a replaceable plow point adapted to engage said tapered nose, said plow point including a threaded aperture substantially aligned with said point stud borehole; and

a point stud for securing said plow point to said nose/shank weldment, said point stud passing through said point stud borehole and engaging said plow point threaded aperture such that an end of said point stud is accessible at said exposed lower portion of said nose/shank weldment.

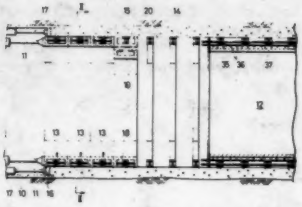
4,799,824

METHOD OF MAKING COVERING WALL OF TUNNEL MADE BY SHIELD TYPE EXCAVATOR

Fumitaka Kumai, and Yoshihiro Takano, both of Tokyo, Japan, assignors to Tekken Construction Co., Ltd., Japan

Filed Nov. 6, 1986, Ser. No. 927,361
Claims priority, application Japan, Jul. 25, 1986, 61-176194
Int. Cl.[4] E21D *9/06, 11/10;* E04B *1/16*
U.S. Cl. 405—146 **7 Claims**

1. A method of making a covering wall on a peripheral wall surface of a tunnel extending behind a shield type excavator, said method comprising the steps of preparing a plurality of form assemblies respectively comprising a form segment for use in casting concrete for forming a primary covering wall and a timbering member for reinforcing said primary covering wall, said step of preparing the form assemblies including the step of detachably coupling said form segment to said timbering member; installing a covering-wall form structure, said step of installing the form structure including the step of assembling the covering-wall form structure from said form assemblies with their timbering members opposed to said peripheral tunnel wall surface; casting concrete into a space defined between the peripheral tunnel wall surface and said covering-wall form structure to form the primary covering wall; and removing the form structure after said cast concrete has set, said step of removing the form structure including detaching the form segments from the timbering members but leaving the timbering members installed against the primary covering wall of the set concrete.

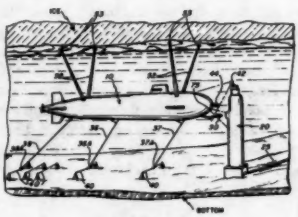


4,799,825

OIL TRANSFER SYSTEM

Shirley B. Meyerhoff, 400 Bellevue Ave., Newport, R.I. 02840, and Charles W. Quellette, 605 Mary Lane, Portsmouth, R.I. 02871

Continuation of Ser. No. 559,408, Dec. 8, 1983, abandoned, which is a continuation of Ser. No. 365,800, Apr. 5, 1982, abandoned. This application Jan. 11, 1985, Ser. No. 690,865
Int. Cl.[4] B63C *11/10*
U.S. Cl. 405—188 **30 Claims**



28. A submarine tanker liquid fuel transfer system for the transfer of liquid fuel at a location under an ice layer comprising;

an underwater station having means for receiving the liquid fuel for transfer to the submarine,

means at the ocean bottom defining an approach area and for guiding the submarine tanker in the direction of said underwater station,

means for decelerating the submarine tanker as it approaches the underwater station,

a liquid fuel transfer device on board the submarine tanker and having an extended position and a retracted position,

a first mooring member on board the submarine tanker,

an underwater station including a second mooring member for interlocking with said first mooring member, and means for receiving said liquid fuel transfer device in its extended position,

means for first locking in engagement said first mooring member with said secong mooring member,

means for thereafter moving said liquid level transfer device to its extended position to engage with said underwater station receiving means,

means for stabilizing the sumbarine tanker once the mooring members are interlocked to maintain the submarine tanker in a substantially horizontal lay,

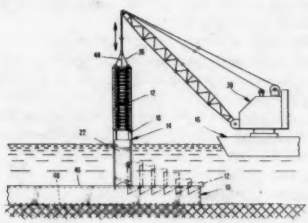
said first and second mooring members comprising a resilient member adapted to enable the members to move longitudinally to permit limited tanker movement, and a swivel means to enable the tanker to move vertically to a limited extent.

4,799,826

METHOD AND APPARATUS FOR CUTTING A SUBMERGED OBJECT INTO PIECES

Wallace Carline, 3201 Lake Palourde Dr., Morgan City, La. 70380

Filed Dec. 14, 1987, Ser. No. 132,031
Int. Cl.[4] B63C *11/00*
U.S. Cl. 405—191 **31 Claims**



1. Apparatus for cutting a submerged object such as a barge into pieces, comprising:

a floating vessel carrying a cable,

a blade carrier including vertical guide means, anchor means projecting downwardly from a lower end of said carrier, and suspending means for suspending said carrier from said cable over the submerged object so that said carrier can be impacted against the object in a manner causing said anchor means to engage the object in positionally constrained relationship therewith,

a cutting blade mounted in said guide means for vertical movement relative to said carrier, said blade including a lower cutting edge, and blade-actuating means for causing said blade to impact downwardly against the object to cut the object while said carrier is positionally constrained relative to the object by said anchor means,

said blade actuating means including means for repeatedly raising said blade and allowing said blade to free fall, and

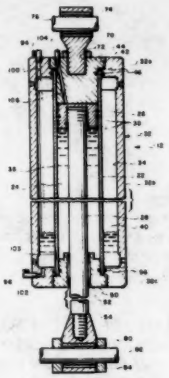
cable actuating means carried by said vessel for actuating said cable to relocate said blade carrier relative to said object for enabling repeated downward free-fall impacting of said cutting edge to make a cut line across the object which separates said object into separately salvageable pieces.

4,799,827

MODULAR RISER TENSIONER INCORPORATING INTEGRAL HYDRAULIC CYLINDER ACCUMULATOR UNITS

David L. Jaqua, Oak View, Calif., assignor to Vetco Gray Inc., Houston, Tex.

Filed Nov. 17, 1986, Ser. No. 931,321
Int. Cl.[4] E02D *21/00*
U.S. Cl. 405—195 **4 Claims**



1. A valveless tensioner unit for supporting a riser from a floating platform including means for supporting said tensioner unit on said platform and means for connecting said tensioner unit to said riser, the improvement comprising,

an inner cylinder,

a piston and piston rod reciprocal in said inner cylinder,

said means for connecting said tensioner unit to said riser being connected to said piston rod,

a single outer cylinder surrounding said inner cylinder and forming an accumulator and containing hydraulic fluid and gas under pressure,

means continuously communicating said hydraulic fluid under pressure to the rod side of said piston to provide the tensioned force on said riser so that said riser is always under tension,

said outer cylinder being otherwise out of fluid communication with said inner cylinder or any other apparatus,

the side of said piston opposite said rod free of hydraulic fluid from said accumulator at all times, and

means sealing said inner and outer cylinders to provide a self-contained tensioner unit.

4,799,828

OFF-SHORE-COMPLEX

Hans Georgii, Stockholm, Sweden, assignor to Hydro Betong AB, Stockholm, Sweden

Filed Apr. 23, 1986, Ser. No. 854,577
Claims priority, application Sweden, Apr. 24, 1985, 8501989
Int. Cl.[4] E02B *17/00*
U.S. Cl. 405—195 **6 Claims**

1. An offshore complex comprising a structure having a lower end and an upper end, said structure made essentially of concrete and comprising a large number of vertically extending, mutually permanently interconnected, cylindrical bodies;

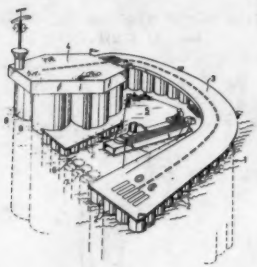
said cylindrical bodies arranged so as to encircle and completely surround an inner area of water within said structure;

the lower end of said structure resting on the seabed;

the upper end of said structure located above the surface of the water;

said cylindrical bodies incorporating ballast chambers which

can be filled with water to varying degrees so that the structure can be caused to float by pumping water out of said chambers;



the upper end of said structure supporting an aircraft takeoff and landing runway climbing helically upwards along a part of the circumference of the structure.

4,799,829

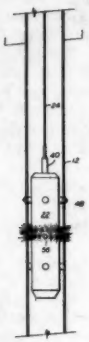
METHOD AND APPARATUS FOR REMOVING SUBMERGED PLATFORMS

Patrick M. Kenny, 105 Eve St., Belle Chassee, La. 70037

Filed Oct. 17, 1986, Ser. No. 920,021

Int. Cl.[4] E02D *9/00;* **E21B** *29/02;* **B23D** *21/00;* **B26D** *3/16*

U.S. Cl. 405—195 **12 Claims**



2. A method for cutting piling and conductors extending into the sea floor from an offshore platform comprising the steps of:

a. lowering a cutter/pinning device with a support cable through a piling or conductor to a desired elevation of cut;

b. engaging the conductor or piling in close proximity to an elevation of cut above and below the elevation of cut;

c. cutting the piling or conductor;

d. maintaining the piling or conductor in substantially aligned and supported position after the piling or conductor has been cut so that the offshore platform remains structurally stable.

8. An apparatus for cutting piling and conductors extending into the sea floor from an offshore platform comprising:

a. a substantially cylindrical shell;

b. upper engaging means extendable from said substantially cylindrical shell to affix said substantially cylindrical shell to the piling or conductor;

c. lower engaging means extending from said substantially cylindrical shell to affix said substantially cylindrical shell to said piling or conductor, said upper and lower engaging means and said substantially cylindrical shell forming a stabilizing means for maintaining the piling or conductor in substantially erected position after cutting of the piling or conductor has been completed;

d. cutting means mounted within the substantially cylindrical shell between said upper engaging means and said lower engaging means.

4,799,830

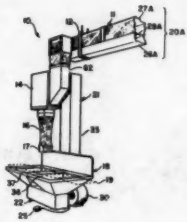
AIR CONVEYOR DISPENSING AND RECYCLING SYSTEM

Gunter G. Fuss, San Mateo, Calif., assignor to Free Flow Packaging Corporation, Redwood City, Calif.

Filed Aug. 7, 1986, Ser. No. 893,999

Int. Cl.[4] B65G *53/60*

U.S. Cl. 406—117 **16 Claims**



1. An air conveyor and dispensing system for non-fluid fluent material adapted for recycling material, comprising:

(a) a conveyor system including a first air conveyor for routing a supply of non-fluid fluent material to at least a selected dispensing point;

(b) a dispensing system at said dispensing point comprising a reservoir for said material and a dispensing valve adapted for selectively opening and closing to dispense material from the reservoir;

(c) recycling means including a container disposed beneath the dispensing valve for collecting spilled material and a second air conveyor connected between the container and the reservoir for directing material from the container via the upper inlet into the reservoir;

(d) the reservoir further comprising lower and upper inlets communicating respectively with the first air conveyor and the second air conveyor and being of a selected small volume such that material in the reservoir selectively blocks the entry of material from the first air conveyor through the lower inlet; and

(e) blower ends for providing air under pressure to the first and second air conveyors for providing air flow therealong for transporting said material.

4,799,831

FLOWABLE SOLID PRODUCT APPLICATOR

Dan Ariaz, 7575 Tamra Dr., Reno, Nev. 89506

Filed Jun. 29, 1987, Ser. No. 68,094

Int. Cl.[4] B05B *5/08*

U.S. Cl. 406—136 **11 Claims**

1. A supply hopper assembly for use with a flowable solid product comprising:

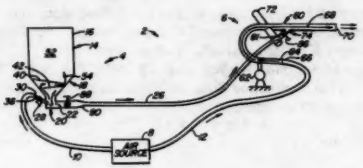
a hopper for holding a supply of the flowable solid product, the hopper having a hopper bottom, the bottom having a cuplike central portion and tapering walls extending upwardly and outwardly from the cuplike central portion, the cuplike central portion including a generally vertical sidewall and a bottom;

the cuplike central portion of the hopper having a product discharge opening through which the product passes out of the hopper;

a first baffle mounted to the tapering walls of the hopper bottom above the product discharge opening, the baffle

including a baffle opening through which the product can pass;

a source of pressurized air; and



an air injector, connected to the pressurized air source, for introducing pressurized air downwardly towards the bottom of the cuplike portion at an acute angle to the vertical so to help fluidize the product within the hopper.

4,799,832

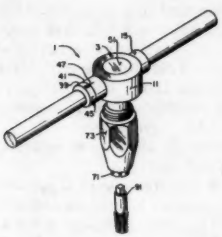
RATCHET TAP WRENCH

Neil M. Abbott, 5 Norton Pl., Kirkwood, Mo. 63122

Filed Jan. 12, 1987, Ser. No. 2,423

Int. Cl.[4] B23G *5/06*

U.S. Cl. 408—123 **17 Claims**



1. A compact, balanced, hand-held ratchet wrench capable of being held and operated with a single hand, the wrench comprising a ring base, a pair of diametrically opposed handles mounted to the base, a rotatable driven member carried within the base, and a ratchet mechanism means built into one of the handles for forming a ratcheting connection with the rotatable driven member selectively in either of two directions, the wrench being sized and shaped to permit both handles to be grasped and the ring base turned with a single hand and the ratchet mechanism means being sized and shaped to be operated with the hand holding the wrench without removing the hand's grip on the wrench, the ratchet mechanism means including an axial bore in one handle, a spring-loaded pawl in the bore, the pawl having a clutch face engaging the driven member, a locking pin extending through a transverse slot in the handle, and a collar rotatably mounted on the handle for turning the pawl through the locking pin, the collar rotating the pawl to positions for reversing the direction of ratcheting and for locking the chuck with respect to the base.

4,799,833

CLUTCH FOR POSITIVE FEED DRILL

Robert A. Pennison, Bellville, and Paul A. Biek, Houston, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 14, 1987, Ser. No. 132,324

Int. Cl.[4] B23B *45/00*; **F16D** *11/00*

U.S. Cl. 408—132 **19 Claims**

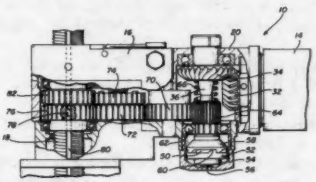
4. In a positive feed drill system, the combination comprising:

a drill housing;

a rotatable tool spindle mounted in the housing, and said spindle being capable of reciprocal movement in advancing and withdrawing;

a reversible motor included in the housing;

driving means located in the housing and operably interposed between the motor and the spindle for rotating and selectively advancing or withdrawing the spindle, said driving means having a forward mode and a reverse mode;



a reversible clutch included in the driving means, said clutch having a forward mode and a reverse mode corresponding in the forward and reverse modes of the driving means;

engaging means in said clutch for enabling the clutch to be in direct drive while in the forward mode;

reverse means in said clutch for engaging the clutch while in the reverse mode; and

disengaging means in said clutch for disengaging the clutch when the clutch encounters excessive torque in the reverse mode.

4,799,834

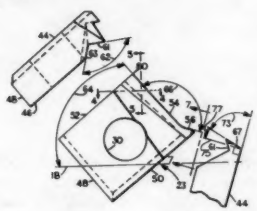
CUTTER INSERT FOR KEVLAR

Wesley G. Wells, Hazelwood, Mo., assignor to McDonnell Douglas, Long Beach, Calif.

Filed Nov. 4, 1985, Ser. No. 794,646

Int. Cl.[4] B23B *51/10*

U.S. Cl. 408—200 **5 Claims**



1. A cutting insert, for use on a rotating holder as a countersinking tool to cut a work piece, said holder having an axis of rotation and a pocket to receive the insert, said pocket having a planar reference surface parallel to the axis of rotation, a first reference surface adjoining and perpendicular to said planar reference surface, and a second reference surface adjoining and perpendicular to said planar reference surface and adjoining and perpendicular to said first reference surface, said cutting insert comprising:

an inside surface for engaging said planar reference surface and seating said insert in the pocket of said holder;

a first peripheral edge, adjoining and perpendicular to said inside surface, for engaging said first reference surface and seating said insert in said pocket of said holder;

a second peripheral edge, adjoining and perpendicular to said inside surface and perpendicular to said first peripheral edge, for engaging said second reference surface and seating said insert in said pocket of said holder;

a third peripheral edge adjoining and perpendicular to said inside surface and perpendicular to said first peripheral edge and parallel to said second peripheral edge;

an outside surface parallel to said inside surface and joining

and perpendicular to said first peripheral edge, joining and perpendicular to said second peripheral edge and joining and perpendicular said third peripheral edge

means for releaseably holding said insert in said pocket of said holder;

a relief face adjoining said third peripheral edge and located between said second and said third peripheral edges, said relief face comprising a flat surface intersecting said inside surface at axial relief angle of 19 degrees plus or minus two degrees and at a radial relief angle of 23° plus or minus 2° ;

a primary rake face adjoining said third peripheral edge and located between said second and said third peripheral edges, said primary rake face comprising a flat surface intersecting said outside surface at an angle of 5 degrees plus or minus two degrees;

a chamfer cutting edge formed by the intersection of the relief face and the primary rake face, said chamfer cutting edge located 4 degrees positive to the centerline of the holder.

4,799,835

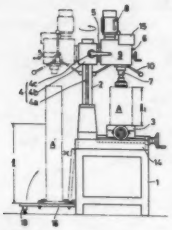
MACHINE TOOL

Katsumi Doi, 13-15, Kujyo 2-chome, Nishi-ku, Osaka, Japan

Filed May 29, 1987, Ser. No. 56,408

Int. Cl.[4] B23Q *1/06*

U.S. Cl. 409—219 **2 Claims**



1. In a machine tool having a pedestal for supporting the machine tool on a supporting surface, a column fixedly mounted on the pedestal and extending in a vertical direction, a workhead movably mounted to the column so as to be movable up and down along the column and around the column, an elevating means for moving the workhead up and down along the column, and a first worktable disposed on the pedestal below the workhead for supporting a workpiece,

the workhead including a spindle, a motor for driving the spindle, a reduction gear and a longitudinal feed gear,

the improvement comprising:

a second worktable hinged to the pedestal for supporting a workpiece,

said second worktable pivotable between a work position at which said second worktable is disposed below the first worktable and extends adjacent said supporting surface and a stowed position at which said second worktable is disposed against the pedestal and is away from the supporting surface,

feed means for moving a worktable operatively connected thereto in at least one direction extending perpendicular to said vertical direction; and

of said first and said second worktables, only said first worktable having said feed means operatively connected thereto.

4,799,836

METHOD AND APPARATUS FOR MACHINING THE SIDE EDGE SURFACE OF A WEB PLATE

Shingo Kurisu; Shunji Omori; Hiroyuki Takenaka; Tsuneo Egawa, all of Hiroshima; Takuro Mitsunaga, and Nobuo Kiyama, both of Mihara, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

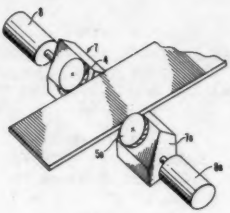
Division of Ser. No. 643,309, Aug. 22, 1984, Pat. No. 4,733,998.

This application Jun. 25, 1987, Ser. No. 66,736

Claims priority, application Japan, Oct. 24, 1983, 58-197577

Int. Cl.[4] B23C *3/12*

U.S. Cl. 409—138 **9 Claims**



1. Apparatus for machining at least one longitudinally extending side edge surface of a web plate comprising,

at least one cylindrical rotary cutter having a rotary axis and cutting edges on a radially outer peripheral surface of said cylindrical rotary cutter which are at a predetermined angle greater than 0 degrees with respect to the rotary axis of said cylindrical rotary cutter;

a rotary shaft fixedly attached to said cylindrical rotary cutter along said rotary axis;

means on which said rotary shaft is mounted for orienting said cylindrical rotary cutter with said rotary axis of said cylindrical rotary cutter inclined at a first angle other than 90 degrees with respect to said side edge of said web plate such that a second angle is formed between the cutting edges and the longitudinal corner edge of the longitudinally extending side edge surface of said web plate to be machined, said second angle lying in a plane containing said longitudinally extending side edge surface and being within the range of 55 degrees to 125 degrees, and for feeding said cylindrical rotary cutter toward the edge of the web plate;

means connected to said rotary shaft for rotating said shaft, whereby when the web plate is moved into contact with said radially outer peripheral surface of said cylindrical rotary cutter and past said cylindrical rotary cutter the side edge surface of the web plate can be machined by the cylindrical rotary cutter, the cylindrical rotary cutter having improved tool life due to more effective use of the cutting edges on the cylindrical rotary cutter.

4,799,837

MULTI-COMPONENT CHUCKING SYSTEM, PARTICULARLY FOR ROTARY MACHINE TOOLS, SUCH AS DRILLS, BORING TOOLS BORING MILLS AND THE LIKE

Rolf Vollmer, Tübingen, Fed. Rep. of Germany, assignor to Montanwerke Walter GmbH, Tubingen, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,913

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711808

Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—232 **11 Claims**

1. Multi-component chucking system, particularly for rotary tool elements (9) having

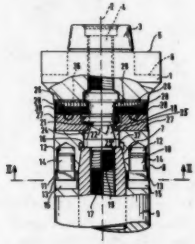
a coupling means (**10, 10a, 18**) secured to the tool element and including an axially extending retention stub (**18, 10a**),

a receiver body (**1**) adapted to rotate about an axis of rotation (**2**), said receiver body having a first end adapted for connection to a machine tool and a second end adapted to receive the coupling element means of the tool element,

said receiver body being formed with a tool element engagement surface (**8**) and a tool element receiving recess (**7**), for retaining the tool element on the body in an axially centered position;

locking means (**27**) engageable with the coupling element means (**10, 10a, 18**) for locking the tool element (**9**) on the receiver body (**1**): and

wherein in accordance with the invention



the retention stub (**18, 10a**) is formed with conical surface regions (**21**) all of which regions are concentric with the axis of rotation (**2**) and form an acute cone angle with the axis of rotation; and

said locking means include locking elements (**27**) radially movably retained in said receiver body (**1**), accessible from the outside of said receiver body, formed with conical locking surfaces thereon for engagement of the conical locking surfaces with said conical surface regions; and

moving means (**29**) engageable with said locking element (**27**) for moving and selectively locking said locking elements and retaining said locking elements in position in the body and engaging said conical locking surfaces with said conical surface regions, or releasing said retention stub from said locking elements.

4,799,838

MILLING CUTTER

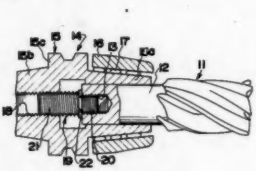
Haruaki Kubo, Osaka; Mitsuru Umeda, and Hiromitsu Iwakoshi, both of Hiroshima, all of Japan, assignors to Daishowa Seiki Co., Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 8, 1986, Ser. No. 849,418

Claims priority, application Japan, Apr. 16, 1985, 60-56733[U]

Int. Cl.[4] B23C *5/26*

U.S. Cl. 409—234 **3 Claims**



1. A milling cutter wherein an internal thread is provided at the center of an end face of the shank of said cutter for preventing accidental detachment thereof, said shank being inserted into a chuck cylinder of a chuck body and chucked at a desired position in an axial direction of said chuck cylinder by a tightening ring via a needle bearing, said tightening ring being provided on the outer circumferential surface of said chuck cylinder, and wherein an adapter is provided between said shank and chuck body, said adapter being provided at one end with a small-diameter threaded part which fits said internal thread and at the other end with a large-diameter threaded part which is adjustable in the axial direction of said chuck cylinder and fits an internal thread which is provided in said chuck body along the axis, and said internal threads and threaded parts being threaded so that they are screwed into each other in the same direction as the direction of the load of a cutting torque which is given to the blade of said cutter.

4,799,839

METHOD AND APPARATUS FOR PERFORMING A ROTARY BROACHING OPERATION PARTICULARLY ON WORK PIECES OF ROTATIONAL SYMMETRY

Garri Berstein, Erkelenz; Hans W. Obrig, Essen; Helmut Wittkopp, Erkelenz, and Hermann Wolters, Moenchengladbach, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed Oct. 16, 1987, Ser. No. 109,932

Claims priority, application European Pat. Off., Oct. 21, 1986, 86 114 599

Int. Cl.[4] B23D *37/00*

U.S. Cl. 409—244 **23 Claims**

1. A method for a rotary broaching operation on work pieces in a broaching machine tool, comprising the following steps:

(a) using, in said machine tool, a tool carrier carrying a plurality of cutting tool edges;

(b) arranging said cutting tool edges along a first curved section on the tool carrier in a radial plane relative to a work piece, in such a way that a first cutting tool edge and a last cutting tool edge mark the beginning and end of said first curved section with cutting tool edges attached thereto and thereby also mark the beginning and end of a second section on said tool carrier free of cutting tool edges;

(c) continuously rotating said tool carrier while performing a sequence of broaching operations;

(d) sensing the presence of said second section free of cutting tool edges in a work piece exchange zone for providing respective control signals;

(e) loading a work piece into said machine tool when said second section free of cutting tool edges faces said work piece exchange zone without interrupting the motion of said tool carrier;

(f) unloading a finished work piece after the completion of a broaching operation by said last cutting tool edge when said second section free of cutting tool edges faces said work piece exchange zone,without interrupting the motion of said tool carrier; and

(g) controlling said loading and said unloading of a work piece in response to said control signals.

4,799,840

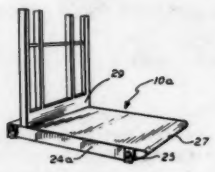
DRUM-RESTRAINING DEVICE

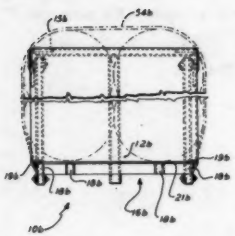
James Van Gompel, Fremont, Ind., and Jerry A. Hall, Bobcaygeon, Canada, assignors to NP Marketing Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 400,425, Jul. 21, 1982, abandoned. This application Oct. 22, 1986, Ser. No. 921,827

Int. Cl.[4] B65D *19/26*

U.S. Cl. 410—42 10 Claims





1. A device for storing and restraining barrel-shaped containers having at least one rim comprising:

(a) a substantially-horizontal platform having a generally-continuous surface on which the containers can be placed,

(b) a vertical frame at one end of the said platform;

(c) means connected to said platform for spacing said platform a given uniform vertical distance from an underlying supporting surface; and

(d) means extendable from below said platform for engaging and firmly gripping said supporting surface;

(e) said horizontal platform being provided with an integral snub-nosed portion at the free edges of said platform, said portion being an extension of said platform projecting from said platform and curving smoothly about and extending below said horizontal part of said platform, and being retroverted but with said extension being spaced from said underlying supporting surface for said device; and

(f) bent rod means extending between the forward ends of the retroverted extensions at the side edges of said platform and the retroverted extension at the forward edge of said platform, said retroverted extensions defining hollow spaces and the ends of said bent rod means being received in said spaces, whereby the rims of containers on said platform can slide over said platform edges without significant damage to the rims of said containers, and whereby containers not loaded on said device will be protected form damage.

4,799,841

DOWEL-LIKE APPARATUS FOR LOCATING A COMPONENT ON A REFERENCE PART

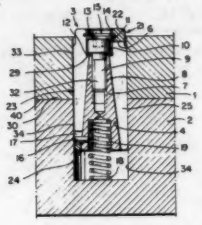
Börje Ramsbro, Djursholm, Sweden, assignor to System 3R International ab, Vällingby, Sweden

Filed Feb. 10, 1987, Ser. No. 13,042

Claims priority, application Sweden, Feb. 11, 1986, 8600599

Int. Cl.[4] F16B *13/06*

U.S. Cl. 411—55 13 Claims



1. Apparatus for locating a component having a through-bore relative to a reference part such that a bore of the reference part having the same inside width as the through-bore is aligned thereto, the apparatus comprising a bushing which has a generally cylindrical exterior outline and is radially elastic at least over a portion of its length beginning from one end thereof, and has an axial passage therethrough which is, adjacent to said one end, radially conically extended and into which, adjacent the opposite end of the bushing, a first annular shoulder and an axially spaced second annular shoulder project radially inwardly for accommodating rotatably a bolt head between said annular shoulders, the bolt being adapted for moving axially a conical member disposed within the conical extension of the passage to expand said radially elastic portion into contact with the walls of said bores, the annular shoulders limiting axial movement of the bolt within the passage.

4,799,842

WELD STUD

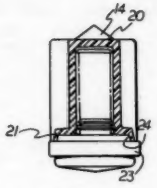
Hans Kreider, Wettenberg, and Manfred Mueller, Wetzlar, both of Fed. Rep. of Germany, assignors to Emhart Enterprises Corp., Farmington, Conn.

Filed Apr. 21, 1987, Ser. No. 40,968

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1986, 36133973; Jun. 5, 1986, 36189022

Int. Cl.[4] F16B *37/06*

U.S. Cl. 411—171 3 Claims



1. A weld stud with a protective cap nut which comprises:

a weld stud portion having an cylindrical section with a diameter larger than that of said cap nut wherein said cylindrical section can be contacted by gripping jaws of a stud welding gun;

an extension with a conical projection located on one side of said cylindrical section to form a subsequent welding point;

a shoulder formed with a chamfer located on the other side

of said cylindrical section, opposite said extension, the shoulder having a diameter smaller than the diameter of the cylindrical section; and

a shank protruding from said shoulder having an externally threaded section and having a ridge axially spaced from the externally threaded section and formed like a thread for engaging an annular recess on the inside of said cap nut; and

a plastic cap nut portion having an internally threaded section threadably engaged to said weld stud portion and having a cylindrical body with an inside diameter sized to threadingly engage said threaded shank,

a flange located at an open end of said cap nut to which is attached a resilient lip which stretches to cover the chamfer of said stud when the cap nut is brought into contact with said shoulder, the outer diameter of said lip being smaller than that of said cylindrical section of said weld stud;

an annular recess inside said cap nut axially spaced from said internally threaded section to engage said ridge on said threaded shank;

a conical projection located at a closed end of said cap nut opposite said lip wherein said cap nut is automatically aligned coaxially with the stud welding gun as said projection is embraced by a holding arrangement inside the weld gun; and

fins located circumferentially about said body and sized so as not to protrude beyond the outer diameter of said cylindrical section of said stud.

4,799,843

LIFTING DOWN APPARATUS FOR A MULTI-STAGE SHELF ASSEMBLY

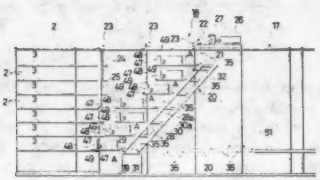
Akira Arase, and Ichiro Wada, both of Yokohama, Japan, assignors to Okamura Corporation, Yokohama, Japan

Filed Mar. 22, 1988, Ser. No. 271,788

Claims priority, application Japan, Mar. 31, 1987, 62-78770

Int. Cl.[4] B65G *47/68*

U.S. Cl. 414—331 **6 Claims**



1. A lifting down apparatus for a multi-stage shelf assembly characterized by comprising:

a base;

foldable frames having a set of arms the lower ends of which are pivotally secured to said base to form a parallel link mechanism in which said base is a fixed link member and a connecting link mechanism for mutually connecting free ends of said arms with each other;

a plurality of rotary shelf assemblies one end of which is pivotally secured to one of said arms of said foldable frames at an interval in the longitudinal direction;

supporting members secured to the other arm to support the free ends of said, plurality of rotary shelf assemblies so that, when said foldable frames are being raised from the base, said plurality of rotary shelf assemblies separating sequentially, and when said foldable frames are lowered down on the base, said rotary shelf assemblies arrange in a line on the same plane; and

a driving means for pivotally moving said foldable frames at a predetermined angle.

4,799,844

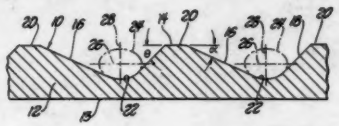
ELLIPTICAL THREAD DESIGN

Jo-Yu Chuang, Sugarland, Tex., assignor to TRW Inc, Cleveland, Ohio

Filed Jan. 11, 1988, Ser. No. 142,789

Int. Cl.[4] F16B *35/04*

U.S. Cl. 411—414 **6 Claims**



1. A screw structure (10) comprising: a cylindrical support member (12); at least one thread (14) extending helically along said cylindrical support member (12) in spaced thread turns, said thread (14) including a load bearing flank surface (16), a non-load bearing flank surface (18), and a crest portion (20) extending between said load bearing flank (16) and said non-load bearing flank (18); a root portion (22) extending between adjacent thread (14) turns; said screw structure (10) characterized by said root portion (22) having a curvature defined by a portion of an ellipse (24) having a major axis (26) and a shorter and perpendicular minor axis (28) with said major axis (28) extending axially of said cylindrical support member (12) and said ellipse (24) tangentially adjoining said load bearing flank (16) and said non-load bearing flank (18).

4,799,845

MEANS FOR ATTACHING SHEET MATERIAL TO A SUBSTRATE

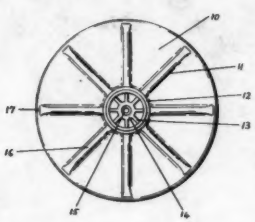
Paul W. Hrysko, Ancaster, Canada, assignor to Dunlop Construction Products Inc., Canada

Filed May 18, 1987, Ser. No. 50,673

Claims priority, application United Kingdom, May 16, 1986, 8612003

Int. Cl.[4] F16B *43/02*

U.S. Cl. 411—542 **19 Claims**



1. A fastening disk for use in attaching sheet material to a substrate, comprising

(a) a disk plate with a substantially discoid concave proximal surface for positioning facing the sheet material to be attached,

(b) concentric inner and outer tubular posts extending from the distal surface of the disk plate,

(c) radial struts connecting the inner and outer posts, and

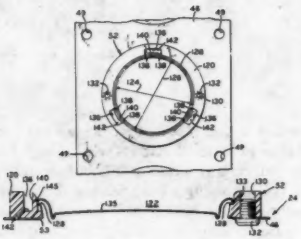
(d) radial vanes on the distal surface of the disk plate between the outer post and the periphery of the disk plate, the disk being compressible to reduce the concavity of the disk plate.

4,799,846

TRANSFER BELT FOR CAN END CONVERSION PRESS

Terry L. Wissman, New Bremen, and Robert L. Schockman, St. Henry, both of Ohio, assignors to The Minster Machine Co., Minster, Ohio

Division of Ser. No. 936,466, Nov. 25, 1986, Pat. No. 4,723,882.
This application Nov. 16, 1987, Ser. No. 121,043
Int. Cl.[4] B21D *51/44*
U.S. Cl. 413—66 **17 Claims**



11. In a press for producing can ends having multiple station tooling means for performing successive operations on can end workpieces, a transfer system for moving said can end workpieces through said press, said transfer system comprising:

an endless flexible belt, and

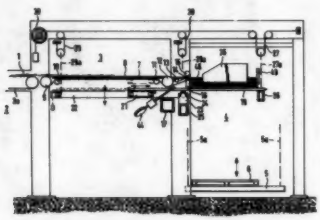
a plurality of can end carriers secured to and carried by said belt, each of said carriers comprising a shoulder adapted to support an outer edge of a can end workpiece and at least three cantilevered, generally vertical self-resilient fingers made from a material inherently capable of elastically flexing radially outwardly to receive a can end workpiece, said fingers having detent means therein for gripping the outer edge of a can end workpiece.

4,799,847

SHEET STACKER

Jakob Bodewein, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1986, Ser. No. 913,811
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3535113
Int. Cl.[4] B65H *31/32*
U.S. Cl. 414—790.8 **10 Claims**



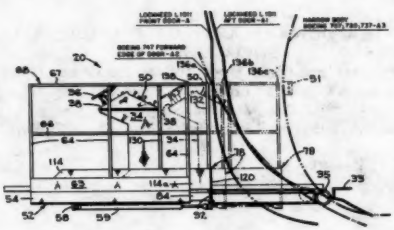
1. In a stacker for sheets such as paper, comprising a transfer table, means for conveying such sheets in overlapping manner to said transfer table, a stacking table to receive said sheets, means for raising and lowering said stacking table, means for conveying sheets from said transfer table to said stacking table along a conveying direction, a bar screen including a plurality of bars, and means for introducing the bar screen above the stacking table in the conveying direction between sheets which have already been stacked and sheets being conveyed to said stacking table, the improvement which comprises free spacers positioned below said transfer table, the free spacers receiving the bars of the bar screen at a level above the top of the stack on the stacking table, a first nozzle for blowing gas in the conveying direction of said sheets, said first nozzle being positioned adjacent the forward end of the transfer table below the level of supply, and a second nozzle for blowing gas, said second nozzle being positioned adjacent the forward end of the transfer table below the level of supply to blow gas downwardly toward the top of the stacked sheets, whereby the bar screen can be advanced to receive the new sheets for stacking while the stack therebelow is removed without reducing the conveying speeds.

4,799,848

ADJUSTABLE CONTROL STATION FOR AIRCRAFT LOADER

Margaret M. Buckley, Orlando, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 30, 1987, Ser. No. 44,274
Int. Cl.[4] B60P *1/02*
U.S. Cl. 414—347 **5 Claims**



1. In an aircraft loader having a front platform with a power driven first conveyor thereon in container transfer position with a power driven second conveyor in an aircraft having aircraft conveyor control means therein adjacent the cargo opening of the aircraft, the improvement which comprises:

support means including a pair of elongated tubes extending longitudinally of the aircraft loader and being rigidly secured to said front platform;

slide means having spaced elongated beams slidably received within said elongated tubes;

connecting means for connecting adjacent ends of each beam together;

movable platform means having rollers journaled on one end thereof and rotatably supported on said tubes, said platform means having an end portion secured to said connecting means;

first power means operatively connected between said supporting means and said platform for reciprocating said platform relative to said tubes between a retracted and an extended position;

a first control means on said platform for controlling the direction of movement of said platform; and

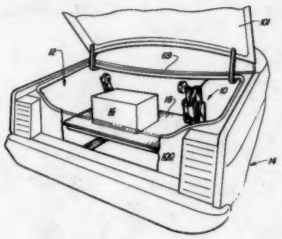
second control means on said aircraft for controlling said conveyor in said aircraft, said first and second control means being within reach of an operator on said aircraft loader to control the movement of the container while being conveyed by said first and second conveyors.

4,799,849

AUTOMOBILE TRUNK LOADING AND UNLOADING DEVICE

Donald L. Miller, 307 Steuben St., Horseheads, N.Y. 14845

Filed Oct. 30, 1987, Ser. No. 114,716
Int. Cl.[4] B60R 5/04
U.S. Cl. 414—462 17 Claims



1. A lifting device for loading and unloading automobile trunks, comprising:

a floor frame;

a pair of platform supports attached to said floor frame, said pair of platform supports having a generally vertical orientation, said pair of platform supports being spaced apart in parallel relation to each other, each platform support of said pair of platform supports further having attached thereto a flange;

a pair of carriages, one carriage being reciprocably mounted to each said platform support, each carriage of said pair of carriages having attached thereto a plate, said plate having means mounted thereon for guiding said carriage along the flange of said platform support to which it is mounted;

a platform frame attached to said pair of carriages;

a platform mounted to said platform frame, said platform having a generally horizontal orientation; and

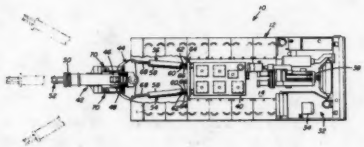
means for reciprocally moving said pair of carriages along said pair of platform supports thereby causing said platform to raise and lower in relation to said trunk.

4,799,850

MATERIAL HANDLING VEHICLE FOR USE IN A MINE

Angelo S. Petitto, Sr.; Angelo A. Petitto, and James L. Petitto, all of Morgantown, W. Va., assignors to Petitto Mine Equipment, Inc., Morgantown, W. Va.

Filed Dec. 3, 1987, Ser. No. 128,336
Int. Cl.[4] B60P 1/54
U.S. Cl. 414—687 8 Claims



1. A material handling vehicle for use in a mine comprising,

a mobile body,

ground engaging traction means connected to said mobile body for propelling said mobile body in a mine along a floor of said mine,

a boom assembly extending from said mobile body,

said boom assembly having a first end portion adjacent said mobile body and a second end portion spaced from said first end portion,

a support post secured to said mobile body and extending upwardly therefrom,

a tubular member surrounding said support post, said tubular member being connected to said support post for rotational movement relative to said support post,

said boom assembly first end portion being connected to said tubular member for vertical pivotal movement relative to said tubular member,

first actuating means mounted on said mobile body and connected to said tubular member, said first actuating means being operable to rotate said tubular member relative to said support post,

first connecting means for securing said boom assembly first end portion to said tubular member to permit said vertical pivotal movement of said boom assembly first end portion relative to said tubular member,

a pair of second actuating means for pivoting said boom assembly first end portion in a vertical path relative to said tubular member, each said second actuating means positioned laterally of a longitudinal axis of said boom assembly,

one said second actuating means positioned laterally of said boom assembly first end portion with an end portion of said second actuating means connected for pivotal movement to said tubular member and an opposite end portion of said second actuating means pivotally received on a pivot pin fixed to a first side wall portion of said boom assembly first end portion, said pivot pin being located further out on said boom assembly from said mobile body than the connection of said second actuating means to said tubular member,

another said second actuating means positioned laterally of said boom assembly first end portion with an end portion of said second actuating means connected for pivotal movement to said tubular member and an opposite end portion of said second actuating means pivotally received on a pivot pin fixed to a second side wall portion of said boom assembly first end portion, said pivot pin being located further out on said boom assembly from said mobile body than the connection of said second actuating means to said tubular member,

said pair of second actuating means operable to effect said vertical pivotal movement of said boom assembly first end portion independently of the rotational movement of said tubular member relative to said support post,

extensible means for extending and retracting said boom assembly second end portion relative to said boom assembly first end portion, said extensible means having an end portion connected to said boom assembly first end portion and an opposite end portion connected to said boom assembly second end portion, and

material engaging means connected to said boom assembly second end portion for engaging material to be lifted and moved by said boom assembly.

4,799,851

LEVEL LIFT HYDRAULIC VALVE

William C. Swanson, 132 Ann St., Clarendon Hills, Ill. 60514

Filed Jan. 28, 1988, Ser. No. 149,377
Int. Cl.[4] B66F 9/00
U.S. Cl. 414—700 3 Claims

1. A hydraulic circuit apparatus, including conduit means and a source of hydraulic fluid, for providing level lift and lowering of an impliment pivotally supported on boom arms, which in turn are pivotally supported on a supporting frame, the hydraulic circuit comprising:

a pair of boom actuating cylinders each pivotally attached at one end to said supporting frame and each pivotally attached at second ends to respective boom arms;

a pair of bucket actuating cylinders pivotally attached at one

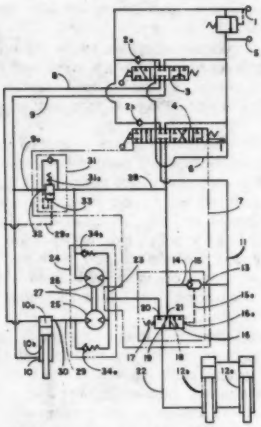
end to said boom arms and pivotally attached at their other ends to said implement respectively;

a four position four-way valve connected to said source of hydraulic fluid and said boom actuating cylinders;

a three position four-way valve connected to said source of hydraulic fluid, said bucket actuating cylinders and said four position four-way valve;

a directional flow control valve having a two position spool valve biased by a biasing spring to a first position and a shuttle check valve normally allowing the passage of hydraulic fluid when said spool valve is in said first position and preventing the passage of hydraulic fluid when said spool valve is in a second position;

a counterbalance valve connected by conduit means to said four position four-way valve and said pair of bucket actuating cylinders;



a rotary flow divider having primary and secondary positive displacement fluid transferring units connected together, said rotary flow divider having a port for communicating with said directional flow control valve, a pair of ports communicating through conduit means with said bucket actuating cylinders, said four position four-way valve and said counterbalance valve;

whereby said bucket actuating cylinders will receive a metered flow of hydraulic fluid from said rotary flow divider when said boom actuating cylinders are being raised and said three position four-way valve is open allowing hydraulic fluid flow through said conduit means for said source of hydraulic fluid and said bucket actuating cylinders will deliver a metered flow of hydraulic fluid to said rotary flow divider when said boom actuating cylinders are being lowered and said three position four-way valve is open allowing hydraulic fluid to flow through said conduit means to tank.

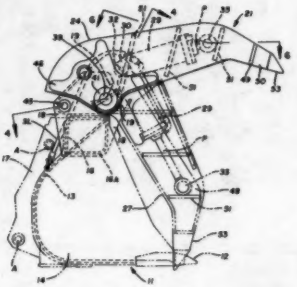
4,799,852

SELF-CONTAINED DEMOLITION BUCKET ATTACHMENT

John R. Ramun, Youngstown, Ohio, assignor to Allied Gator, Inc., Youngstown, Ohio

Filed Mar. 12, 1987, Ser. No. 24,969
Int. Cl.[4] B65F 9/18
U.S. Cl. 414—724 **5 Claims**

1. Apparatus for attachment to a loading bucket of a construction vehicle for conversion thereof to a demolition device said loading bucket having an elongated body plate cross sectionally curved intermediate its ends and of a known length and having an upper portion defining a horizontal upper edge and having panels on its opposite ends, said apparatus comprising: a pair of oppositely disposed longitudinally extending cross sectionally V-shaped reinforcing members position on the opposite sides of said upper portion at said upper edge thereof so that said upper portion extends diagonally therebetween, at least a pair of upstanding apertured plates having first openings inwardly of one end thereof engaged on the oppositely disposed V-shaped reinforcing members inwardly of said panels of said bucket, a demolition bucket attachment having pivot means thereon for registry with curved notches in said upstanding apertured plates above said openings, said demoli-



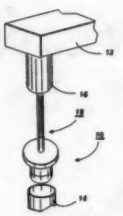
tion bucket attachment having a pair of horizontally spaced jaws and a structural web positioned therebetween and secured thereto, said jaws and structural web of said demolition attachment being of a lesser width than said known length of said body plate of said bucket so that its opposite ends are spaced inwardly of said end panels, means positioned in said jaws and connected thereto and to said upstanding apertured plates for moving said jaws and structural web toward and away from said body plate of said bucket.

4,799,853

SELF-CENTERING END EFFECTOR

Edward J. Wrobbel, Fairport; Louis S. Canzoneri; Ronald P. Cocchiara, both of Rochester, and Nikhil C. Paul, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1986, Ser. No. 915,596
Int. Cl.[4] B66C 1/54
U.S. Cl. 414—730 **8 Claims**



1. An apparatus for acquiring an individual article having a substantially cylindrical aperture therein from a supply of roughly aligned articles in a storage bin, including:

a fixedly mounted head assembly;

means for gripping the article, said gripping means comprising a cylindrical portion adapted to be interfit into the cylindrical aperture of the article, and a flange portion fixedly connected to and extending outwardly from one end of said cylindrical portion and adapted to abut against one end of the article when said cylindrical portion has been interfit into the cylindrical aperture of the article;

means for moving said gripping means into the cylindrical aperture of the article and retracting said gripping means with the article secured releasably thereto from the storage bin; and

means, associated with said head assembly, for receiving said gripping means and substantially aligning the longitudinal axis of the cylindrical aperture of the article substantially parallel with the longitudinal axis of said receiving means.

4,799,854

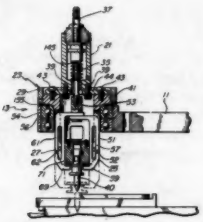
ROTATABLE PICK AND PLACE VACUUM SENSE HEAD FOR DIE BONDING APPARATUS

Gary G. Niskala, Garden Grove, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 20, 1987, Ser. No. 75,157

Int. Cl.[4] B66C *1/02*

U.S. Cl. 414—737 **27 Claims**



1. A pick and place apparatus for picking up and placing a die carrying electronic circuitry using collect means having a vacuum pickup, said apparatus comprising:

spindle means;

means for rotatably securing said spindle means with respect to said mounting head;

jaw means for grasping a said collet means; and

means affixed to said spindle means for slidably extending said jaw means in order to grasp said collet means therein and for thereafter retracting said jaw means and said collet means.

4,799,855

IMPELLER CONSTRUCTION FOR CENTRIFUGAL PUMP OF TWO-PUMP PUMP UNIT

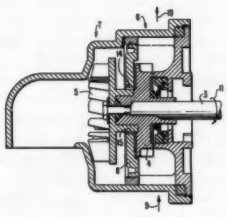
Claudio Milocco; Ugo Favret, both of Pordenone, and Antonio Martegani, Trieste, all of Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Oct. 30, 1987, Ser. No. 115,032

Claims priority, application Italy, Nov. 27, 1986, 45753 A/86

Int. Cl.[4] F04D *23/00*

U.S. Cl. 415—143 **4 Claims**



1. In a pump unit including first and second pumps having respective impellers and motor drive shaft means, fixed to said impellers of said first and second pumps, for alternately rotating said impellers in a first direction, during which only said first pump delivers a liquid, and an opposite second direction, during which only said second pump delivers a liquid, the improvement wherein:

said first pump comprises a peripheral outflow pump; and

said second pump comprises a centrifugal pump and said impeller thereof includes blades oriented forwardly with respect to said second direction.

4,799,856

VARIABLE CAPACITY RADIAL FLOW TURBINE

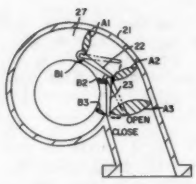
Nobuyasu Matsudaira; Michio Kyoya; Takashi Mikogami; Yoichiro Okazaki, all of Sagamihara; Eito Matsuo, and Nobuhiro Takahira, both of Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,643

Claims priority, application Japan, Sep. 17, 1986, 61-142146[U]

Int. Cl.[4] F01D *17/16*

U.S. Cl. 415—155 **15 Claims**



1. A variable capacity radial flow turbine comprising:

a housing having therein a turbine wheel and a scroll-shaped passageway for passage of gas from an inlet of said housing to said turbine wheel;

means for adjusting the cross-sectional area of said passageway so that the flow rate of gas passing to said turbine wheel can be changed, said means comprising a plurality of pivotable blades pivotally mounted about respective pivot axes to said housing, a first one of said pivotable blades being located in said passage way upstream of a second one of said pivotable blades also located in said passageway, said first blade being pivotable from a closed position at which gas passes through said passageway only radially outwardly of said first blade to an open position at which gas passes through said passageway both radially inwardly and radially outwardly of said first blade, said second blade being pivotable in said passageway to vary the cross-sectional area of said passageway at a position downstream of said first blade.

4,799,857

CASING FOR FLUID FLOW MACHINES

Gerd H. Bauer, Wattenheim; Armin Görisch, Offstein; Herbert Hartmüller, Ludwigshafen; Gerhard Meyer, Frankenthal; Alexander Nicklas, Dirmstein; Detlef Prokasky, Frankenthal, and Jürgen Schill, Weisenheim, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pflaz, Fed. Rep. of Germany

Filed Nov. 20, 1987, Ser. No. 123,380

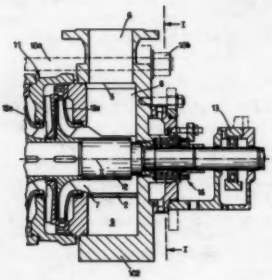
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640894

Int. Cl.[4] F04D *29/42*

U.S. Cl. 415—185 **10 Claims**

1. In a fluid flow machine, particularly in a centrifugal pump, a rotor including a shaft arranged to rotate about a predetermined axis; and a casing having a fluid-admitting first portion extending substantially radially of said shaft and having a first outlet, and a second portion rigid with said first portion and comprising a substantially band-like arcuate wall spacedly

surrounding said shaft and defining therewith a passage for reception of fluid from said first outlet, said wall having end portions flanking said first outlet and said passage having a substantially oval cross-sectional outline in a plane extending at



right angles to said axis, said second portion having a second outlet arranged to receive fluid from said passage and said rotor means further comprising at least one fluid conveying element provided on said shaft, adjacent said second outlet and arranged to convey liquid away from said wall.

4,799,858

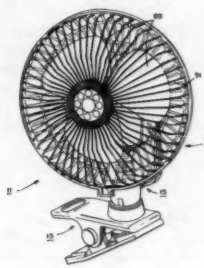
CLIP-ON ELECTRIC FAN

Shao Shin-Chin, San-Chung, Taiwan, assignor to Holmes Products Corp., Holliston, Mass.

Filed May 19, 1986, Ser. No. 864,512

Int. Cl.[4] F04D *29/60*

U.S. Cl. 416—110 **10 Claims**



1. A portable electric fan comprising:

a. a base assembly

b. a yoke assembly movably mounted on the base assembly, and

c. a fan unit mounted on the yoke assembly,

d. the base assembly including a member having a concave top surface, the concave top surface having a plurality of dimples arranged in a circle,

e. the yoke assembly including a yoke and a concave stepping disc, the yoke including a cup shaped joint having an elongated slot, the concave stepping disc having a bottom surface having a plurality of circular projections arranged in a circle and a top surface having a raised portion, the concave stepping disc being disposed between the cup shaped joint and the concave top surface of the assembly base with the raised portion of the concave stepping disc being slidably movable from one end to the other in the elongated slot, the circle of projections on the stepping disc being aligned with the circle of dimples on the concave top surface.

g. whereby, the raised portion in the stepping disc moving in the elongated slot in the cup shaped joint enables the yoke assembly to be tilted back and forth relative to the base and the projections in the disk and the dimples in the boss enable the yoke assembly to be rotated relative to the base assembly in a stepping fashion.

4,799,859

HELICOPTER ROTOR BLADE CONTROL

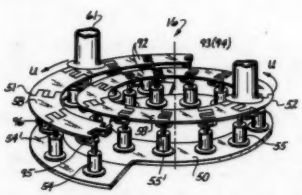
Herbert Zimmer, Friedrichshafen, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 5, 1986, Ser. No. 927,656

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 3539338

Int. Cl.[4] B64C *27/18*

U.S. Cl. 416—20 R **14 Claims**



1. Circulation control for rotor system for helicopter type aircraft wherein blades of the rotor are provided with nozzle-like slots along leading edges and along trailing edges of the blades, there being a control provided for feeding pressurized gas to said slots, the improvement comprising:

gas feeder tubes with openings and leading to said slots for said feeding of pressurized gas from a plenum chamber;

a pair of annularly shaped, stationary control members in said plenum chamber, one of said members being a complete annulus, a second one of said members being at least a semi-annulus, and being respectively associated with and disposed in a path for the air flow to the trailing and leading edges of the blades and respectively cooperating with said openings of said gas feeder tubes for said feeder tubes to be at least partially covered by portions of the respective control member upon rotation of the feeder tubes relative to the control members in relation to each other pursuant to rotation of the blades; each of said annulus control member being composed of a plurality of individual control surfaces and sector segments; and

two pluralities of control means, respectively, connected to said annular control members such that individual ones of the control means are connected to individual ones of the segments, for rendering the control members separately and independently variable in direction of the periphery or transversely thereto such that the resulting variation locally varies respective control gaps between said feeder tube openings and the respective control surface but independently for the two annular members on account of the two pluralities of control means.

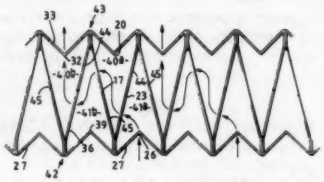
whereby the peripheral portion of said incoming high velocity gas stream is successively diverted by the perimetric border portion of said orifice plates with a concommitant reduction in velocity thereof and a change of direction toward substantially parallel relation with the longitudinal axis of said perimetric housing.

4,799,944

GAS FILTER

George Dixon, Sidmouth, England, and Henry W. Eaves, Gullane, Scotland, assignors to Binks Bullows Limited and Spencer & Co., Limited, both of, England

Filed Mar. 25, 1988, Ser. No. 173,087
Claims priority, application United Kingdom, Mar. 28, 1987, 8707482
Int. Cl.[4] B01D *45/00*
U.S. Cl. 55—446 6 Claims



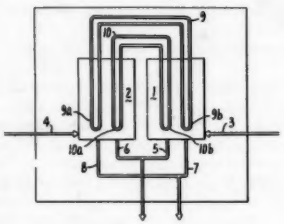
1. A gas filter comprising a single continuous sheet of material folded along a plurality of parallel fold lines and interconnected at appropriate folds so as to produce an element having spaced front and rear faces and a plurality of partition walls extending between said front and rear faces and defining therebetween a plurality of chambers of wedge-shaped cross-section, the wedge-shapes of adjacent chambers being oppositely orientated, and said sheet being formed with apertures such that gas flows through the filter from an aperture in the front face to an aperture in the rear face and in so doing is constrained to pass through apertures in at least one partition wall so as to pass through at least two adjacent chambers.

4,799,945

DUAL FREEZING CHAMBER SYSTEM AND METHOD FOR WATER PURIFICATION

Chung N. Chang, Los Altos, Calif., assignor to Polar Spring Corporation, Menlo Park, Calif.

Filed Oct. 27, 1987, Ser. No. 114,232
Int. Cl.[4] B01D *9/04*; C02F *1/22*
U.S. Cl. 62—532 37 Claims



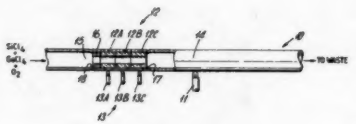
1. A water purification system comprising:
a first chamber and
a second chamber, each having a generally vertically-oriented thermally-conductive wall;
heat transfer means having a first portion thermally coupled to the first chamber and a second portion thermally coupled to the second chamber, said first portion of said heat transfer means being thermally coupled to said wall for extracting heat through said wall from water within the first chamber to form a layer of ice adjacent said wall that grows in thickness inwardly from said wall; and
means for operating the heat transfer means in a mode to extract sufficient heat from the first chamber via the first portion to form a layer of ice adjacent said wall in the first chamber, and simultaneously to supply sufficient heat to the second chamber via the second portion to melt ice within the second chamber.

4,799,946

PREPARATION OF GLASS FIBRE

Benjamin J. Ainslie, and Susan P. Craig, both of Ipswich, England, assignors to British Telecommunications plc, London, England

Filed Mar. 20, 1987, Ser. No. 28,213
Claims priority, application United Kingdom, Apr. 24, 1986, 8610053
Int. Cl.[4] C03B *37/018*
U.S. Cl. 65—3.12 7 Claims



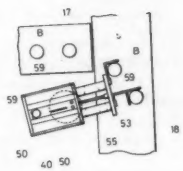
1. A method of making a source for providing metal compounds into MCVD, which method comprises:
(i) depositing a porous silica layer on the inner surface of a substrate tube by MCVD, said MCVD beihg performed at a temperature below the sintering temperature of the deposited silica,
(ii) soaking the product of the MCVD in a solution of a metal compound; and
(iii) evaporating the solvent of the solution whereby the porous layer is impregnated with the metal compound.

4,799,947

APPARATUS FOR CARRYING BOTTLES IN BOTTLE MAKING MACHINE

Hiroshi Miyagi, and Akihiko Ohno, both of Ogaki, Japan, assignors to Nihon Taisanbin Kogyo Kabushiki Kaisha, Gifu, Japan

Filed Oct. 28, 1987, Ser. No. 113,700
Claims priority, application Japan, Nov. 29, 1986, 61-285433
Int. Cl.[4] C03B *9/40*
U.S. Cl. 65—158 4 Claims



1. An apparatus for conveying bottles in a bottle making machine having a pusher for moving said bottles and a servomotor for reciprocally swinging said pusher within a predetermined angular displacement for moving said bottles along an archwise track onto a conveyor, comprising means for emitting signals for the start and stop of said servomotor at a predetermined time, servo-control means for supplying a drive cur-

4,799,863

VACUUM FLOW DEVICE

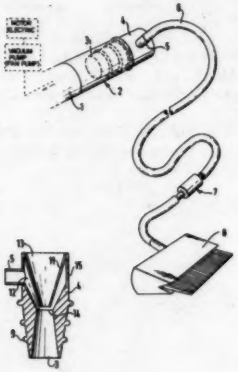
Raymond Gannon, London, England, assignor to FGL Projects Limited, London, England

Continuation of Ser. No. 881,219, Jul. 2, 1986, abandoned. This application May 9, 1988, Ser. No. 193,203

Claims priority, application United Kingdom, Jul. 3, 1985, 8516838

Int. Cl.[4] F04B *23/08*; F04F *5/44*; A47L *5/16*

U.S. Cl. 417—84 **10 Claims**



1. Vacuum device arrangement comprising a gaseous flow system including

a flexible suction intake conduit operatively connected to a vacuum fan pump,

a Venturi pump element having a main fixed size flow inlet, a restrictive flow inlet, a Venturi arrangement, and a common outlet, the main flow inlet and the restrictive flow inlet being arranged for communicating at the Venturi arrangement for intermingling of flow from the main inlet with flow from the restrictive inlet for exiting through the outlet, and the outlet being releasably flow connected to the suction intake conduit,

a member in which pressure is to be reduced, and

a flexible restrictive flow conduit flow connecting the member with the restrictive flow inlet of the Venturi pump element,

the main fixed size flow inlet having a selective main flow cross section and the restrictive flow inlet having a selective restrictive flow cross section which is smaller than the flow cross section of the main flow inlet, for controlled corresponding flow, into the main inlet from the exterior of the arrangement, and into the restrictive inlet through the restrictive flow conduit from the member in which pressure is to be reduced.

4,799,864

HYDRO-PNEUMATIC PUMPSETS

Stephen J. Hockley, Portsmouth, England, assignor to Action Pumping Services Ltd., England

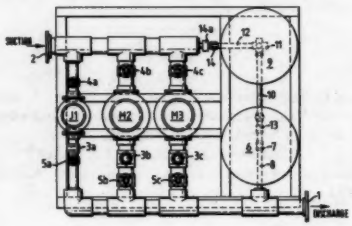
Filed Oct. 15, 1987, Ser. No. 108,798

Claims priority, application United Kingdom, Oct. 17, 1986, 8624953

Int. Cl.[4] F04B *41/06, 49/00*

U.S. Cl. 417—7 **5 Claims**

1. A packaged hydro-pneumatic pumpset system including a plurality of pumps connected to suction and discharge manifolds and arranged to be brought into operation sequentially when required in response to actuation of respective pressure switches, a footvalve in the suction pipe inlet to maintain a prime on the pumps and an hydraulic accumulator arranged to store water such as to maintain pressure in the system when the pumps are not operating, characterised in that a second hydraulic accumulator is included in the system and connected to the first accumulator via a non-return valve and to the suction



manifold of the pumps via means arranged to be actuated when all the pumps are inoperative, to maintain a reservoir of stored pressurised water in the suction manifold to assist the footvalve to form a positive seal by remaining closed on its seating.

4,799,865

INTERMITTENT SERVICE SCREW COMPRESSOR

Johnny Oscarsson, Gustavsberg, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

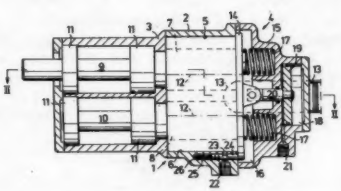
PCT No. PCT/SE86/00557, § 371 Date Aug. 3, 1987, § 102(e) Date Aug. 3, 1987, PCT Pub. No. WO87/03651, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 8, 1986, Ser. No. 90,799

Claims priority, application Sweden, Dec. 10, 1985, 8505821

Int. Cl.[4] F04B *49/02*; F04C *18/16, 29/00*

U.S. Cl. 417—283 **4 Claims**



1. A continuously driven screw compressor adapted for intermittent compressor operation, comprising:

a compressor housing means (1) which comprises a casing wall means (2) which encloses at least two radially overlappping compression chambers (5, 6) each of which accommodates a respective helical rotor (7, 8), said helical rotors each being fixedly connected to a respective bearing shaft (9, 10);

said compressor housing means including a compressor inlet (12);

said housing means (1) having spaced apart end portions, and comprising at respective end portions thereof a high-pressure end wall means (4) at a high pressure end of the compressor, and a low-pressure end wall means (3) at a low pressure end of the compressor;

said casing wall means (2) having end surfaces at least in the vicinity of said high-pressure end wall means (4);

said high-pressure end wall means (4) including:

means defining a space (16) which is in communication with said compressor inlet (12) through a channel (12');

and

a movable wall plate means (14) which, in an active compression state of the compressor, is in sealing abutment with said end surfaces of said casing wall means (2) and which, for the purpose of deactivating the compressor,

is movable in the axial direction of the compressor in said space (16) in said high-pressure end wall means so as to communicate said compression chambers (5, 6) with said compressor inlet (12) through said space (16) and said channel (12');

auxiliary drive means (20) coupled to said movable wall plate means (14) for selectively moving said wall plate means (14) in said axial direction of the compressor;

said rotors (7, 8) being coupled with respective journals (11) via their respective bearing shafts (9, 10) solely at the low-pressure end of the compressor;

said movable wall plate means (14) having a sealing surface facing said end surfaces of said casing wall means (2), said sealing surface being imperforate and extending sealingly across said compression chambers;

oil injecting means (22, 23) for injecting oil into said compression chambers (5, 6); and

valve means (24) coupled to said oil injection means for throttling or interrupting a flow of oil to said compressor chambers when said movable wall plate means (14) is in its compressor deactivating position;

said valve means (24) being coupled to said movable wall plate means (14), and said valve means (24) being operable to a position for throttling or interrupting said flow of oil to said compression chambers responsive to movement of said movable wall plate means (14) to a position out of sealing abutment with said end surfaces of said casing wall means.

4,799,866

SPRAY PUMP WITH A MOTOR DRIVEN DRIVE ROD

Ulrich Faeser, Kronberg, and Dieter Maha, Bad Homburg v.d.H., both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

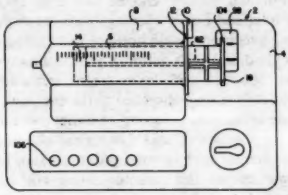
PCT No. PCT/DE85/00259, § 371 Date May 27, 1986, § 102(e) Date May 27, 1986, PCT Pub. No. WO86/01117, PCT Pub. Date Feb. 27, 1986

PCT Filed Aug. 1, 1985, Ser. No. 865,732

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1984, 3428635

Int. Cl.⁴ F04B *13/00*

U.S. Cl. 417—415 **8 Claims**



1. An improved spray pump for metered delivery of a liquid from a spray cylinder by means of a spray piston, the spray pump having a housing, means for mounting the spray cylinder in the housing, a motor drive in driving connection with a threaded shaft mounted within the housing, and a gear unit for transmitting drive force from the threaded shaft to the spray piston, the gear unit having an axially movable drive rod extending through the wall of the housing, one end of the drive rod being engageable with the spray piston outside of the housing, the improvement comprising:

a translationally movable coupling arranged in a bearing block to connect the drive rod to the threaded shaft, the coupling having a coupling pin provided with a threaded section, the coupling pin being displaceably mounted on the bearing block and having a U-shaped recess extending transversely to the longitudinal axis of the coupling pin with the threaded section disposed on the side wall of the recess to engage the threaded shaft;

the drive rod being pivotably mounted around its longitudinal axis in the housing for actuating the coupling, the drive rod being at a distance from and parallel to the threaded shaft;

a control element fixed to the drive rod and located between the drive rod and the coupling pin, the control element having a cam which engages the coupling pin and which is disposed eccentric to the axis of rotation of the control element; and

a torsional locking rod being arranged parallel to and at a distance from the threaded shaft and the drive rod, the bearing block engaging and being movable along the torsional locking rod in a direction parallel to the longitudinal axis of the torsional looking rod.

4,799,867

VANE PUMP WITH BRITTLE VANES AND ROUGH FINISHED HOUSING SURFACE

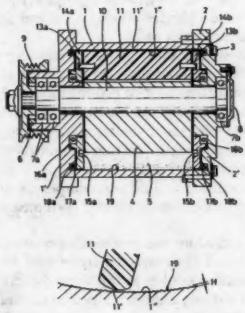
Hiroshi Sakamaki; Yukio Horikoshi, and Kenji Tanzawa, all of Sakado, Japan, assignors to Eagle Industry Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1987, Ser. No. 118,100

Claims priority, application Japan, Nov. 21, 1986, 61-178289[U]

Int. Cl.⁴ F04C *18/344, 29/00*

U.S. Cl. 418—1 **5 Claims**



1. A method of operating a vane pump of the type having a housing with a rotor chamber having an inner peripheral surface, a rotor rotatably mounted in the rotor chamber and having an axis of rotatation which is eccentric relative to the axis of the inner peripheral surface of the rotor chamber, the rotor having a plurality of generally radially disposed vane slots, and a plurality of vanes slidable mounted in the vane slots and operable to define variable volume chambers for effecting a pumping action as the rotor rotates and the vanes move generally radially in and out of the vane slots, the method of operation comprising the steps of limiting the radial outward movement of said vanes from said vane slots to provide a minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral surface of said rotor chamber, providing a roughened surface on said inner peripheral surface of said rotor chamber, operating said vane pump with said minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral roughened surface of said rotor chamber, continuing to operate said vane pump over a prolonged period of time to the extent that wear occurs and that as a result of said wear, said minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral roughened surface of said rotor chamber is reduced to zero, and immediately abrading said outer radial ends of said vanes by contact with said roughened surface such that said

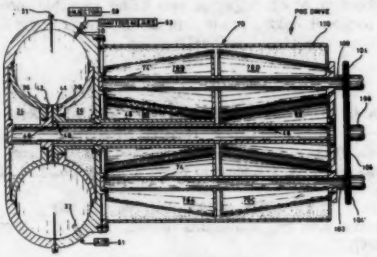
minimal near-zero clearance is reestablished between the outer radial ends of said vanes and the inner peripheral surface of said rotor chamber.

4,799,868

COMPRESSOR/PUMP

Clifford E. Wilson, 128 College St., Madisonville, Tenn. 37354

Continuation-in-part of Ser. No. 878,350, Jun. 25, 1986, Pat. No. 4,716,870. This application Dec. 30, 1987, Ser. No. 139,856
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.[4] F04C *18/00*
U.S. Cl. 418—36 17 Claims



1. A compressor/pump, which comprises:

wall means defining at least one toroidal cylinder;

at least one pair of flywheels mounted for rotation with respect to said cylinder around a central axis thereof and with respect to each other;

piston means within said cylinder including a first pair of pistons mounted on one of said flywheels at selected locations, and a further pair of pistons mounted on another of said flywheels at selected locations, said pistons cooperating to define with said cylinder compressing/pumping and inlet chambers during rotation of said flywheels and said pistons attached thereto;

means for admitting a fluid for compressing/pumping into said inlet chambers through said wall means of said cylinder;

means for controlling the mode of operation of said piston means and said flywheels whereby said first and further pairs of pistons revolve in the same direction within said cylinder at varying angular velocities during cycles of said compressor/pump, said means for controlling said mode including

a. a first rotating shaft carrying said one of said flywheels,

b. a second rotating shaft carrying said another of said flywheels,

c. at least one first gear member carried on said first rotating shaft, said first gear member defining a substantially conically configured surface with a first end of a first selected diameter and a second end of a second selected larger diameter, said surface provided with first gear engagement means of a selected configuration,

d. at least one second gear member disposed proximate said first gear member having a conically configured surface with a first end of one selected diameter proximate said first end of said first gear member, said surface of said second gear member provided with further gear engagement means of a selected configuration operatively associated with said gear engagement means on said surface of said first gear means whereby said second grear means is rotatable in a direction opposite said first gear means, said configuration of said first and further gear engagement means of said first and said second gear members selected whereby intermeshing between said first and said second gear members reciprocates between ends of said gear members whereby said second gear member is rotated at said varying angular velocities with respect to said first rotating shaft, and

e. gear coupling means connected between said second gear means and said second rotating shaft to rotate said second rotating shaft at said varying angular velocities with respect to said first rotating shaft to thereby cause said pistons to define said compressing/pumping and inlet chambers within said cylinder during an engine cycle; and

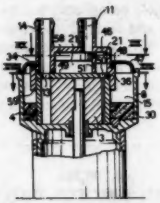
rotary drive means connected to said mode controlling means for rotating said gear members.

4,799,869

PNEUMATIC VANE PUMPS WITH OIL SEPARATION

Ettore Cordiano, Turin; Pierino Garnero, Rosta, and Domenico Frigo, Vicenza, all of Italy, assignors to CORINT S.r.l. and GARRIG 4 S.a., both of, Italy

Division of Ser. No. 24,189, Mar. 10, 1987, abandoned. This application Mar. 28, 1988, Ser. No. 178,789
Claims priority, application Italy, Mar. 10, 1986, 67188 A/86; Feb. 2, 1987, 67065 A/87
Int. Cl.[4] F04C *29/02*
U.S. Cl. 418—97 2 Claims



1. A pneumatic vane pump comprising a substantially cylindrical housing,

a cylindrical seat concentrically mounted within said housing and defining an oil reservoir chamber between said cylindrical seat and said housing,

an electric driving motor mounted in said housing,

a rotor coupled to said motor and mounted within said cylindrical seat for rotation about an axis eccentrically disposed relative to said cylindrical seat, said rotor having a plurality of recesses each having a vane movably mounted therein for contact with said cylindrical seat,

a plate mounted on one end of said cylindrical seat and having inlet and outlet openings therethrough,

cover means secured to said housing and having an end wall and a cylindrical wall defining a substantially cylindrical chamber between said cover means and said plate with said outlet opening disposed adjacent said cylindrical wall, said cover means having an outlet passage communicating the interior of said cylindrical chamber with the exterior thereof and an inlet passage extending through said cover means and communicating said inlet opening with the exterior of said cover means,

partition means secured to said cover means adjacent said outlet hole in said plate and spaced from said cylindrical wall of said cover means for forcing air from the outlet opening over the cylindrical wall of the chamber before entering said outlet passage for depositing transported oil on said cylindrical wall of the cylindrical chamber by centrifugal action.

4,799,870

FLUID POWER TRANSFER DEVICE

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469

Filed Jan. 23, 1987, Ser. No. 6,378
Int. Cl.[4] F01C *1/12, 3/08, 1/344*
U.S. Cl. 418—151 22 Claims

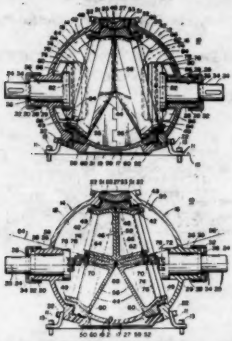
1. A fluid power transfer device comprising:

a pair of vanes;

a hinge for connecting the vanes;

a pair of shafts; and

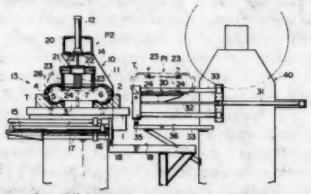
a pair of linkages for coupling each of the vanes to its respective shaft, wherein each of the linkages allows its respective vane to oscillate about the hinge and constrains the hinge to rotate in a plane perpendicular to the shafts.



4,799,871
UNLOADER MECHANISM FOR USE WITH A VULCANIZING MACHINE

Yasuhiko Fujieda, Akashi; Itaru Amano, and Masahide Kanzawa, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 13, 1987, Ser. No. 2,939
Claims priority, application Japan, Jan. 16, 1986, 61-7364
Int. Cl.[4] B29C *35/00*
U.S. Cl. 425—38 **3 Claims**



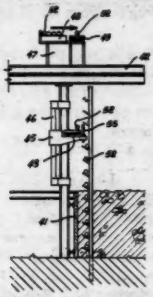
1. A tire vulcanizing apparatus, comprising:
upper and lower molds;
a tire unloader;
a central bag well unit disposed coaxially in the lower mold for being vertically movable coaxially through the latter and having a bladder retractable thereinto;
a frame body horizontally movable and linearly reciprocable in parallel with the lower mold toward and away from a removing position wherein said frame body is vertically in alignment with an axis of the lower molds; and
piston actuator means fixedly mounted on said frame body and axially aligned with a grappling unit vertically movable by said actuator means toward and away from the lower mold along said axial of said lower mold and a tire coaxially received in the lower mold, and including finger means controllingly engageable with a radially inner edge of an upper bead portion of the cured tire for simultaneously removing said tire from said lower mold and central bag well unit and for substantially maintaining the same horizontal posture of said tire when in said mold.

4,799,872
SLIPFORM APPARATUS FOR EMPLACING HORIZONTAL ARCUATE RE-INFORCING RODS

Paul A. Dowdle, "Twickenham", Manilla New South Wales 2346, Australia

Filed Nov. 9, 1987, Ser. No. 118,730
Claims priority, application Australia, Nov. 10, 1986, PH8880
Int. Cl.[4] E04G *11/22, 21/16*; B28B *21/56*
U.S. Cl. 425—63 **7 Claims**

1. A slip-form having formwork for defining at least one surface of a wall-space into which reinforcing rods are located at selected positions to form a reinforcing structure for a poured concrete structure, the slip-form further including a plurality of spaced apart upwardly extending members supporting said formwork, and roller assemblies releasably engaged with at least some of the members, with a plurality of said roller assemblies being horizontally aligned and spaced to form within said space a height adjustable horizontal race and at least one of said roller assemblies being vertically and horizontally spaced from an adjacent roller assembly to form an inclined race feeding down to said horizontal race, said inclined race being adapted to transport reinforcing rods onto the horizontal race for onward transport to a location adjacent to a selected position in the reinforcing structure.

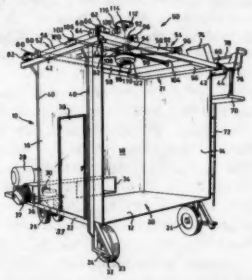


4,799,873
METHOD AND APPARATUS FOR MANUFACTURING TRUCK BODIES

Roger J. Martin, Toronto, Canada, assignor to Diesel Equipment Limited, Toronto, Canada

Filed Jul. 11, 1983, Ser. No. 512,184
Int. Cl.[4] B29C *41/08*
U.S. Cl. 425—73 **16 Claims**

1. A machine for manufacturing a unitary glass fibre reinforced body shell comprising;
(a) a mold having a top forming wall and a pair of oppositely disposed side forming walls extending from opposite side edges of the top forming wall to form a mold cavity which is generally U-shaped in cross section, said cavity being longitudinally elongated and having a length at least equal to the length of the required shell,
(b) a carriage adapted for movement along said mold in the direction of its longitudinal extent, at least a portion of said carriage being arranged to extend into said mold cavity in use,
(c) a turntable mounted on said carriage for rotation about a first axis which extends in the direction of said longitudinal movement of said carriage in use,
(d) an arm slidably mounted on said turntable for movement in a radial direction with respect to said first axis,
(e) dispenser means mounted on said arm for rotation and radial movement with said arm with respect to said first axis, said dispenser being adapted to dispense glass fibre reinforced resin,



(f) guide means communicating with said turntable and said arm, said guide means being adapted to cause said arm to reciprocate with respect to said turntable in said radial direction to maintain a substantially constant length of trajectory extending between the dispenser and the wall of the mold, and,

(g) drive means rotably driving the turret about said first axis under the control of said guide means thereby to cause the point of contact of the dispenser trajectory to travel along the mold surface at a constant speed to uniformly distribute the coating thereon.

4,799,874

EXTRUSION HEAD

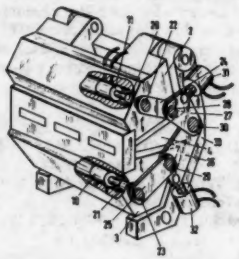
Klaus Beilmer, Rosnenberg, and Gerd Capelle, Langenhagen, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 5, 1987, Ser. No. 116,885

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1986, 3638623

Int. Cl.[4] B29F 3/04; B29C 47/12

U.S. Cl. 425—131.1 4 Claims



1. An extrusion head suitable for producing tread strips for automotive vehicle tires from a plurality of rubber mixtures comprising a central head portion, upper and lower head portions disposed one on each side of said central head portion, said upper head portion and said central head portion and said lower head portion and said central head portion jointly defining at least two flow channels therebetween through which said rubber mixture is directed toward an extrusion nozzle, said flow channels being disposed above one another in a vertical plane, hydraulic means for pivoting each of said upper and lower head portions relative to said central head portion, said upper and lower head portions each including lateral portions extending substantially parallel to the direction of flow of said rubber mixtures through said extrusion head, hydraulically actuated locking means mounted on each said lateral portion and displaceable laterally outwardly in a direction substantially at right angles to said direction of flow, said locking means including locking members engage able with each said lateral portion and a locking arrangement for high-pressure locking of said upper and lower head portions, wherein said locking members are cylindrical and said locking arrangement includes tensioning link members, each said tensioning link member defining a recess for receiving one of said cylindrical locking members, common pivot means for pivotally mounting said locking arrangement for said upper head portion and said locking arrangement for said lower head portion disposed on the same lateral side of said head, and wherein each of said locking arrangements includes substantially triangular spacer members, and means for mounting said spacer members on each lateral portion of said upper and lower head portions about said common pivot point means, and further including separate hydraulically actuated piston and cylinder arrangements acting on each of said spacer members, each spacer member being pivotally connected to one of said tensioning link members.

4,799,875

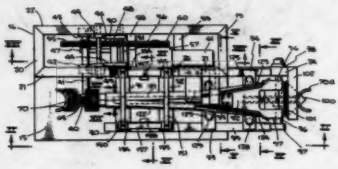
ARTICULATED BELT LIKE TOROID FORMING MACHINE

Daniel T. Thompson, 1141 Napoli Dr., Pacific Palisades, Calif. 92079

Filed Dec. 23, 1987, Ser. No. 138,836

Int. Cl.[4] A21C 9/08

U.S. Cl. 425—329 19 Claims



1. An articulated, belt like toroid forming machine comprising:

a plurality of individual dough forming members;

conveyor means for mounting said members in a substantially continuous, belt like, array in a closed revolving loop with said members facing outwardly of said loop;

each of said members being uniformly flexible laterally across the width thereof in a direction which is generally perpendicular to the direction of revolution of the members on said conveyor means;

mandrel means positioned relative said conveyor means to allow passage of said members along a mandrel portion thereof with a dough strip positioned therebetween;

member shaping means positioned relative said mandrel portion and conveyor means for flexing said members into generally cylindrical configuration about said mandrel portion when conveyed thereby by said conveyor means whereby dough strips positioned therebetween are rollable into toroid form, and wherein:

each of said dough forming members comprises a body having outer ends which come into juxtaposition when said members are in said cylindrical configuration.

19. In a toroid forming machine having a plurality of individual forming members, conveyor means for mounting said members in a substantially continuous, belt like, array in a closed revolving loop, mandrel means positioned relative said conveyor means to allow passage of said members along a mandrel portion thereof with a dough strip positioned therebetween and member shaping means for flexing said members about said mandrel portion when conveyed thereby, the improvement comprising the provision of:

each of said members being sufficiently flexible laterally so as to be capable of assuming various configurations of their lateral extent in the range of substantially flat to substantially cylindrical;

an outwardly expanding tapered dough exit end on said mandrel portion; and

an outwardly expanding tapered dough exit shaping end on said member shaping means whereby dough toroids being formed between said mandrel and shaping means are expanded in size at the exit end of said mandrel means and shaping means relative an initial toroid size formed therebetween.

4,799,876

BLOW MOLDING APPARATUS

Donald L. Peters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1988, Ser. No. 158,440

Int. Cl.[4] B29C 49/60

U.S. Cl. 425—536 14 Claims

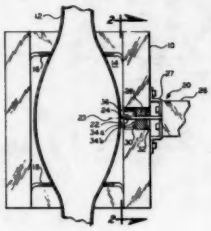
1. A blow molding apparatus comprising:

mold means which includes a pair of movable mold halves

which are adapted to receive a parison in a cavity defined therebetween;

blow means which includes a blow needle, having a longitudinal axis and a blow gas outlet end, which is adapted to puncture said parison with said gas outlet end and extend into the interior of said parison;

sealing means which includes a plurality of generally concentric projections, each said projection completely surrounding said needle and having a first end, with inner and



outer closed boundaries, and also a second end, wherein each said projection extends from said first end to said second end in a direction generally toward said cavity and generally parallel to said needle longitudinal axis, said sealing means being capable of assuming at least one position such that said projections extend into said cavity, whereby a parison can come into sealing contact with said projections at its exterior surface while said blow needle extends into the interior of said parison during blow molding thereof.

4,799,877

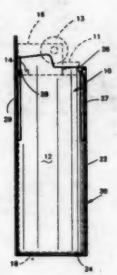
CHILD-PROOF ADAPTOR FOR DISPOSABLE BUTANE CIGARETTE LIGHTER

Jerry L. Bisbee, 38153 Erie Rd., #20B, Willoughby, Ohio 44094

Filed Jun. 13, 1988, Ser. No. 206,088

Int. Cl.[4] F23D *11/36*

U.S. Cl. 431—153 **4 Claims**



1. For a gas-fueled cigarette lighter, primarily of the disposable type comprising a fuel tank and a flame support with a fuel valve therebetween that is linked in operational relationship to a thumb lever, the depressing of which thumb lever allows the flow of fuel to the flame support where it may be ignited and burned, a safety device comprising a barrier adapted to engage the thumb lever to restrict the motion of the thumb lever relative to the body of the lighter, which barrier is carried and supported by a spring-loaded finger extending from a band that is adapted to at least partially surround and slidably engage the body of the lighter, wherein the sliding motion of the band on the lighter selectively causes engagement or disengagement of the barrier with the thumb lever, and wherein the sliding motion of the band on the lighter may be selectively prevented or allowed by the selective engaging or disengaging of a spring-loaded member having a laterally extending projection, as a pin or a tab for examples, adapted to fit into a pre-existing opening, a hole or a slot for examples, in the lighter's structure, wherein, to allow depressing of the thumb lever and thereby to permit gas flow to the flame support of the lighter, the projection on the spring-loaded member must first be held disengaged from its mating opening while the band is slid axially relative to the generally cylindrically-shaped lighter, thereby also moving the barrier from engagement with the thumb lever.

4,799,878

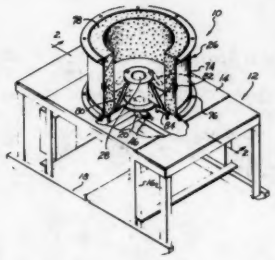
RICH FUME INCINERATOR

Thomas W. Schaeffer, 5431 Sylvania Petersburg Rd., Petersburg, Mich. 49270

Filed Nov. 16, 1987, Ser. No. 120,667

Int. Cl.[4] F23D *14/00*

U.S. Cl. 431—202 **13 Claims**



1. An incinerator for burning volatile organic gases, said incinerator comprising burner means including a combustion chamber for incinerating said volatile organic gases, said burner means in fluid flow communication with a fuel supply line and an organic gas material line, said volatile organic gases entering said burner means at an elevated temperature and constituting a mixture of volatile organic gases and ambient air wherein the heat of said volatile organic gases acts to heat said ambient air.

4,799,879

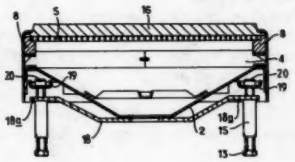
RADIANT BURNERS WITH A CERAMIC FRAME

Marc Laspeyres, Herlies, France, assignor to Solaronics Vaneecke, Armentieres, France

Continuation-in-part of Ser. No. 803,159, Dec. 2, 1985, abandoned. This application Feb. 29, 1988, Ser. No. 162,171

Int. Cl.[4] F23D *14/12*

U.S. Cl. 431—328 **10 Claims**



1. In a radiant burner of the type comprising a screen and at least one radiant plate enclosed by a peripheral band associated with a body defining a premixing chamber for the said burner, the improvement comprising:

an upper flange on the peripheral band,

a ceramic frame underlying and extending downwardly from said upper flange on said peripheral band,

said ceramic frame having an internal peripheral structure which engages and support at least said screen and possibly said plate to be supported,

said internal peripheral structure permitting limited movement of said screen to minimize thermal and mechanical stresses thereon, and

a resilient means integrally affixing said peripheral band to said body.

4,799,880

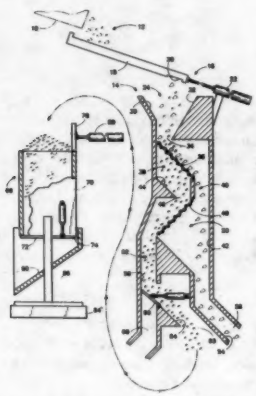
METHOD AND APPARATUS FOR ANALYZING PRODUCT FLOW

Charles McCoy, P.O. Box 282, 560 E. Monroe, Huntington, Oreg. 97907

Filed Aug. 19, 1987, Ser. No. 87,024

Int. Cl.[4] F27B *14/00*

U.S. Cl. 432—13 **6 Claims**



1. A method of controlling the sintering of a particulate product in a kiln, or the like, through monitoring the condition of the product comprising:

regularly and periodically diverting from a moving mass of the product leaving the kiln a flow of material and directing such flow of material into a flow system through which the material passes,

treating the flow of material by screening the flow of material in said flow system to produce a flow of sized material in the flow system having a particle size within a predetermined range,

collecting in said flow system from the flow of sized material a measured volume of material, weighing the measured volume to obtain a weight-related measurement,

electronically recording the weight-related measurement and time of measurement,

and controlling sintering conditions in response to the recorded time and weight-related measurements.

4,799,881

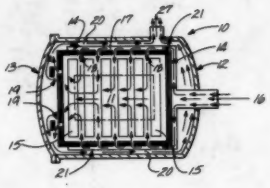
"TWIST-LOCK" GAS NOZZLE FOR A HEAT TREATING FURNACE

John K. Grier, Walnut, and Dane T. McGuire, San Dimas, both of Calif., assignors to Grier-McGuire Inc., Industry, Calif.

Continuation-in-part of Ser. No. 919,769, Oct. 16, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 82,045

Int. Cl.[4] F27D *15/02*

U.S. Cl. 432—77 **10 Claims**



1. A heat treating furnace comprising:

a shell;

wall means disposed within said shell and defining a heating chamber inside of said shell;

means for heating workpieces in said chamber, there being a space between said shell and said wall means, holes extending through said wall means, nozzles disposed in said holes and establishing communication between said space and said chamber;

means for causing gas to flow from said space and said chamber through said nozzles; and

means allowing an internal end of said nozzles to be inserted and removed from inside the furnace and removed after initial heat up without damaging the end so that it can be re-used.

4,799,882

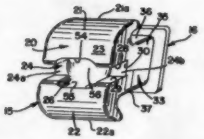
EDGEWISE BRACKET

Peter C. Kesling, LaPorte, Ind., assignor to TP Orthodontics, Inc., Westville, Ind.

Filed Nov. 17, 1987, Ser. No. 122,066

Int. Cl.[4] A61C *7/00*

U.S. Cl. 433—8 **24 Claims**



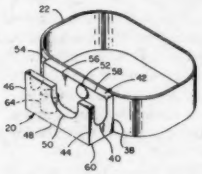
1. An orthodontic bracket of the edgewise type comprising, a body having a single tie wing, said tie wing having occlusal and gingival tie wing tips, a mesiodistally extending and labially opening archwire slot having occlusal and gingival walls, a scoopout opening to the labial and along said slot and intermediate the ends thereof, and said scoopout being sized to reduce the archwire contacting surfaces of the slot, whereby the sliding friction generated between the archwire and the bracket during movement of the bracket along the archwire is reduced thereby enhancing tooth movements and patient comfort.

4,799,883

ORTHODONTIC MIRROR IMAGE BRACKETS TO REMOVABLY RECEIVE THE END PORTIONS OF LINGUAL ARCH WIRES

Arnold E. Stoller, 2150 Shore Ave., Freeland, Wash. 09249, and John L. Stoller, 901 Sunset Dr., Blue Bell, Pa. 19422

Filed Mar. 25, 1987, Ser. No. 30,442
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—17 33 Claims



1. An orthodontic bracket for connection with an orthodontic wire, comprising:

a. a body including first and second spaced sidewall means, first and second spaced endwalls disposed therebetween and top and bottom surfaces;

b. a first slot disposed between said sidewall means and extending from said top surface and at least one of said endwalls of providing an entrance to said slot through said one endwall;

c. one of said sidewall means for attachment to a support;

d. means operably associated with the other of said sidewall means for permitting said other sidewall means to flex;

e. means extending from one of said sidewall means and into said first slot for overlying and thereby locking an orthodontic wire therein; and,

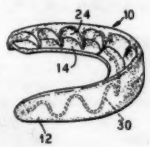
f. means operably associated with the other of said endwalls for engaging an orthodontic wire and preventing axial displacement thereof along said first slot.

4,799,884

EXPANSION/BUCCAL SHIELD APPLIANCE

Earl O. Bergersen, 950 Green Bay Rd., Winnetka, Ill. 60093

Filed Nov. 4, 1987, Ser. No. 116,672
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—6 14 Claims



1. An orthodontic appliance for expansion of at least one of the upper or lower arches in a patient comprising generally U-shaped appliance comprising:

a buccal shield portion for overlying a labial-buccal surface of at least one of the upper or lower rows of the patient's teeth,

an interocclusal plate extending lingually of said shield,

a lingual flange to overlie a linual surface of the patient's incisors, and

a plurality of projections defining tooth receiving slots therebetween extending longitudinally from said buccal flange,

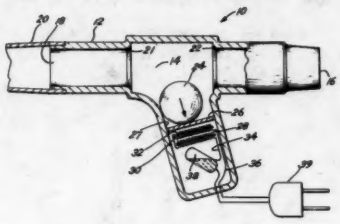
said projections being spaced to project between each of the posterior teeth of the patient.

4,799,885

AUTOMATIC HIGH VELOCITY EVACUATOR DENTAL SUCTION DEVICE

Dean R. Hussong, 10 Bradley Farm Rd., Tomahawk, Wis. 54487

Filed Jun. 1, 1987, Ser. No. 56,422
Int. Cl.[4] A61C *17/04*
U.S. Cl. 433—95 5 Claims



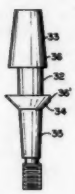
1. In a dental suction device of the type including a hand-held instrument with a throughbore having an inlet and an outlet, suction means connected to the outlet, and valve means for controlling fluid flow in the throughbore, the improvement comprising an orientation responsive switch means integral with the hand-held instrument for controlling the valve means and adapted to operate the valve means to permit suction of fluid and debris when aligned in a first operating position, and to prevent such suction and flow when said switch is aligned in a second standby position.

4,799,886

DENTAL SUBMERGED ENDOSSEOUS IMPLANT

Joachim Wimmer, Fort Lee, N.J., assignor to Park Dental Research Corp., New York, N.Y.

Filed Apr. 16, 1987, Ser. No. 39,537
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—176 4 Claims



1. A dental implant system comprising:

a one-piece integral submerged endosseous blade implant having as portions thereof, a thin substantially flat elongated blade portion having top and bottom edges; a cylindrical collar portion at least part of which extends above said top edge and having a smooth external wall, a screw-threaded bore and top and bottom ends; and a collar support portion extending from the bottom end of the collar portion to the blade portion;

a flat-headed screw healing plug which is screwed into said bore after the implant is positioned in a groove in the patient's bone;

and a metal abutment head assembly having a head portion and a screw-threaded shaft portion, the shaft portion being screwed into said bore after the patient's gum is opened and the healing plug removed;

wherein said head portion has a groove forming a top and a bottom head portion and the top head portion is bent at an angle to the bottom head portion at said groove, and wherein said groove is circumferential about the head and

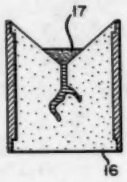
the top portion is bent at said groove in the range of 1 to 15 degrees.

4,799,887

GLASS CERAMIC DENTAL CROWN AND METHOD OF MANUFACTURING THE SAME

Yasuharu Hakamatsuka, and Kazuhiro Watanabe, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1986, Ser. No. 879,355
Claims priority, application Japan, Jul. 5, 1985, 60-147932
Int. Cl.[4] A61C *13/08*; C03C *10/16*
U.S. Cl. 433—212.1 **7 Claims**



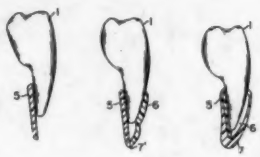
1. A glass ceramic dental crown prepared from a dental crown material comprising 7 to 11% by weight of Li_2CO_3, 18 to 28% by weight of SiO_2 and 10 to 15% by weight of Na_2SiF_6 and having 5–10% by weight of a spodumene crystal phase and 10–20% by weight of a mica crystal phase.

4,799,888

DENTAL PROCESS WITH TREATED FABRIC

Jeff E. Golub, 128 E. 71st St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 878,640, Jun. 26, 1986, Pat. No. 4,728,291. This application Nov. 6, 1986, Ser. No. 927,504
Int. Cl.[4] A61C *5/00*
U.S. Cl. 433—215 **5 Claims**



3. The process for reshaping teeth as follows:

(a) apply soft orthodontic wax to approximate and mock-up the final restorations,

(b) pumice the teeth, etch them on all surfaces and then use standard lavage and drying techniques,

(c) cut cloth in ¼ inch lengths measured as wide as the proximal incisal corners, less about ¼ mm, from each edge, cut two for each tooth and hold aside,

(d) apply Silane-selected from the group consisting of vinyltriethoxy silane, vinyltrichloro silane, (gamma) g-amniopropyltriethoxy silane, (gamma) g-methacryloxy propiyn silane, to the cloth,

(e) affix the cloth about half way up the tooth even for a 1 or 2 mm. extension, for bruxers, even the tiniest requires a cloth wrap, so that the cloth will extend to within ½ mm. of the final bonded length,

(f) apply light-cured bonding liquid to the enamel surface and cure,

(g) apply a non-light cured luting agent,

(h) place a cellophane strip loosely adjacent to the lingual surface wrapping labially through the two interproximals, place autocured adhesive paste on the lingual surface of the enamel and onto the sides, wet the cloth thoroughly with the paste, compress the parts together with the cellophane strip insuring that the extended cloth is following the imaginary inclined plane of the lingual surface of the tooth, remove any paste adhesive which spills onto the labial surface,

(i) apply a new mix or adhesive paste on the labial surface of the enamel and on a second piece of cloth, compress again with a clear plastic strip,

(j) once set, reduce the cloth structure with a dry medium diamond stone to within ½ millimeter of the ultimate bonded length and width, check the occlusion,

(k) roughen any material which appears shiny and add light cured bonding adhesive to the cloth structure and to the remaining enamel surface and cure it,

(l) add composite resin, choosing a microfill for the lingual surface for strength and a microfill for the labial surface for polish and luster,

(m) sculpt and finish normally the outer bonding composite resin, should envelope the cloth entirely and should be firmly attached to the labial, lingual and proximal enamel surfaces, as well as to the cloth-resin complex,

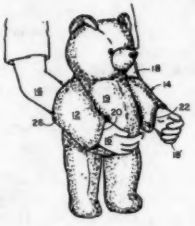
(n) polish and finish.

4,799,889

STUFFED BEAR AS TEACHING AID

Patricia Yockey, 8514 Shadowood Dr., Everett, Wash. 98208

Continuation-in-part of Ser. No. 099,984, Sep. 23, 1987. This application Dec. 11, 1987, Ser. No. 131,507
Int. Cl.[4] G09B *21/04*
U.S. Cl. 434—112 **7 Claims**



1. A stuffed animated object for use in teaching sign language, and communicating through signs and gestures, comprising:

a main body portion comprising a first side section and a second side section;

a pair of arms projecting from said main body portion, each of said pair of arms comprising a hollow, tubular arm member having a rearward circumferential edge surface and a forward circumferential edge surface, whereby an arm of a person may be passed through each of said pair of arms; each said forward circumferential edge surface being free from further connection, the interior volume of each said tubular arm communicating with the ambient air at both said forward and rearward circumferential edge surfaces;

each of said pair of arms having a length as taken between said rearward and forward circumferential edge surfaces less than the length of an arm of an average adult so that the hand of the arm may project beyond said forward circumferential edge surface to allow free movement to the hand for teaching sign language, or the like;

the circumference at each said edge surface being large enough to allow for the passage of an adult's hand and arm;

said rearward circumferential edge surface of each said pair of arms being secured to a respective side section of said

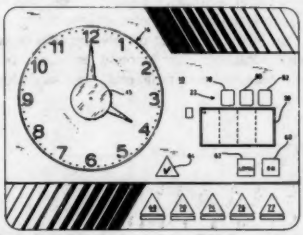
main body portion along a fraction of the circumferential length thereof, said fraction of length comprising an upper peripheral section thereof, said fraction being between ⅛ and ½ of the total length of said respective circumferential edge surface.

4,799,890

ELECTRONIC LEARNING DEVICE FOR TEACHING HOW TO TELL TIME

Barbara J. Thompson, 3032 Early Morning La., Knoxville, Tenn. 37922, and Ashok Dittakavi, Gwinnett County, Ga., assignors to Barbara J. Thompson, Knoxville, Tenn.

Filed Nov. 23, 1987, Ser. No. 123,729
Int. Cl.⁴ G09B *19/12*
U.S. Cl. 434—304 **12 Claims**



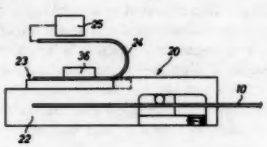
1. An electronic learning device comprising:
student input means for generating a code representative of time;
interrogation (visual and/or auditory) means responsive to said code generated by said student input means to request said student to engage in a selected time-identification problem;
comparison means responsive to reading a specific code generated by said input means in response to said request to determine if said specific code corresponds to a correct student response to said time-identification problem; and
a display means to effect said request and comment on the appropriateness of response by said student to time-identificatin problems.

4,799,891

DUAL-CONTACTING APPARATUS FOR CHIP-CARDS

Manfred Reichardt, Weinsberg, and Eberhard Raab, Untereisesheim, both of Fed. Rep. of Germany, assignors to Amphenol Corporation, Wallingford, Conn.

Filed May 11, 1987, Ser. No. 48,170
Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618091
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 439—43 **21 Claims**



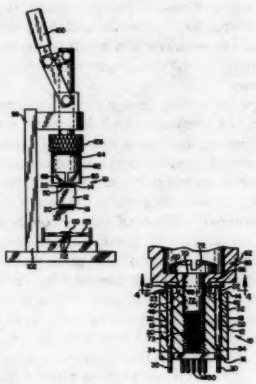
1. A dual-contacting apparatus for contacting selectively the card contacts of a chip-card of a first type or the card contacts of a chip-card of a second type, said apparatus having a set of contact elements which comprises:
insulating body means,
a plurality of contact elements supported by said insulating body means, wherein said contact elements form a first group of contact elements which are adapted for contacting the contacts of said chip-card of said first type, and wherein further said contact elements form a second group of contact elements which serve for contacting the card contacts of said chip-card of said second type.
means for connecting the contact elements with an electronic card processing means, wherein each contact element comprises a termination member adapted for connection with the card processing means and a contact member for contacting one of the card contacts, and
means for coupling corresponding ones of the contact elements of the first and second groups, such that the connecting means is either connected only to the termination members of the contact elements of said first group or only to the termination members of the contact elements of said second group.

4,799,892

METHOD AND APPARATUS FOR REMOVABLY ATTACHING SEMICONDUCTOR PACKAGES TO CIRCUIT BOARDS

William P. Hargreaves, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Oct. 13, 1987, Ser. No. 107,204
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 439—72 **13 Claims**



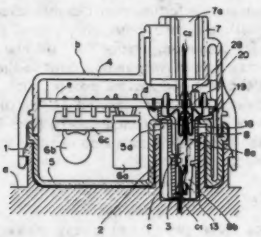
1. An apparatus for removably attaching the leads of a semiconductor package to the conductive pathways on a circuit board comprising:
a retaining member having a top, a bottom, and a plurality of bores extending therethrough from said top to said bottom;
a plurality of pressure pins each positioned within a different one of said bores, each pin comprising an upper section extending outwardly through the top of said retaining member, and a lower section extending outwardly through the bottom of said retaining member for engaging one of said leads of said semiconductor package; and
biasing means comprising a planar resilient member fixedly positioned adjacent said top of said retaining member and having a center portion, and a plurality of legs extending outward from said center portion, each leg being positioned adjacent and above said upper section of a corresponding one of said pins and communicating with said upper section of each pin for urging said pin in a downward direction independently of said other pins when said pin engages a lead of said semiconductor package.

4,799,893

FUNCTION-PRESET WIRING DEVICE FOR AUTOMOBILES

Kikuo Ogawa, and Kikuo Kimura, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 28, 1987, Ser. No. 43,353
Claims priority, application Japan, May 2, 1986, 61-100900
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—76 **3 Claims**



1. In a wiring device wherein a junction block, which is used for electric wiring of an automobile, and an electronic unit, which is provided with a case accommodating therein a printed circuit plate formed with a functional circuit for connecting signals between wire harnesses and which is also provided with a junction block coupling connector and an external coupling connector at an outer periphery of the case, said electronic unit and said junction block being removably connected by the junction block coupling connector, the improvement comprising:

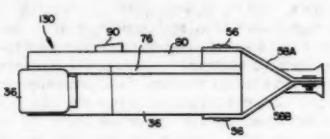
a function-preset wiring device for an automobile comprising a through terminal which is formed with a junction block connecting portion at one end of a base plate and an external output terminal portion at the other end thereof, and a branch terminal having lead terminals associated with elastic sandwiching pieces for receiving said external output terminal portion of said through terminal, said external output terminal portion of said through terminal penetrating said printed circuit plate when said external output terminal portion is inserted between and held in contact with said elastic sandwiching pieces of said branch terminal fixed perpendicularly to said printed circuit plate by said lead terminals, thereby to protrude into said external coupling connector an end of said of external output terminal portion remote from said junction block connecting portion.

4,799,894

THREE WIRE GROUNDED, POLARIZED STAGE PLUG AND RECEPTACLE

Raymond M. Banigan, 13047 Garris Ave., Granada Hills, Calif. 91344

Filed Sep. 8, 1987, Ser. No. 93,990
Int. Cl.[4] H01R *1/00*
U.S. Cl. 439—92 **18 Claims**



1. A polarized, grounded plug for use with AC, comprising:

a plug housing;

a first load carrying contact installed in said housing and exposed at one side of said housing at one end thereof;

a second load carrying contact installed in said housing and exposed at the other side of said housing at said one end thereof;

a thin insulating layer installed over the top of said housing, said thin insulating layer substantially covering the top of said housing;

A T-shaped ground terminal retaining plate having a slot located on the bottom side thereof and an aperture extending therethrough in the central portion of the leg of the T, the leg of said T being narrower than the width of said housing; and

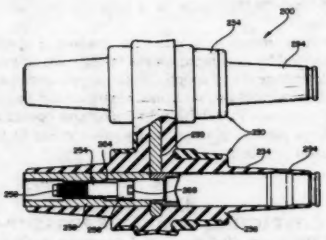
a ground terminal inserted into said slot on the bottom side of said ground terminal retaining plate, a portion of said ground terminal extending through said aperture in said ground terminal retaining plate to the top side thereof, said ground terminal retaining plate being secured over said thin insulating layer on the top side of said housing, thereby retaining said ground terminal between said ground terminal retaining plate and said thin insulating layer.

4,799,895

600-AMP HOT STICK OPERABLE SCREW-ASSEMBLED CONNECTOR SYSTEM

Alan D. Borgstrom, Hackettstown, N.J., assignor to Amerace Corporation, Parsippany, N.J.

Filed Jun. 22, 1987, Ser. No. 64,849
Int. Cl.[4] H01R *13/53*
U.S. Cl. 439—183 **9 Claims**



1. A high voltage hot-stick operable screw-assembled connection system for selectively coupling together a source of high voltage and a high voltage cable comprising:

a support member;

an apparatus bushing mounted upon said support member and electrically coupled to a source of high voltage;

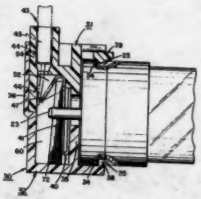
a high voltage cable mounted upon said support member and electrically insulated therefrom and a selectively applicable screw-operated link member when applied in a first arrangement joining said apparatus bushing to said cable to apply high voltage thereto or, when not applied between said apparatus bushing and said cable, providing a visible separation between said bushing and said cable; said screw-operated link member comprising a first and a second housing assembly each containing a metallic insert, one of said first and said second housing assemblies screw coupled to said apparatus bushing and the other screw coupled to said high voltage cable and a conductive metal buss coupling said metallic inserts of said first and said second housing assemblies.

4,799,896

SOCKET FOR COMPACT FLUORESCENT LAMPS

Edwin Gaynor, Southport, and John C. Dinsdale, Stratford, both of Conn., assignors to Edwin Gaynor Co., Stratford, Conn.

Filed Oct. 26, 1987, Ser. No. 112,527
Int. Cl.[4] H01R 33/02
U.S. Cl. 439—232 14 Claims



1. A socket for a compact fluorescent lamp which includes two or more parallel tubes that share a common base, said base including at least two terminal pins and two retaining means for engagement with the socket, comprising:

a housing including a back wall, a front wall, with top and bottom walls and two side walls extending from said back wall and forward of said front wall each terminating in a forward edge, thereby defining a front opening for receiving said lamp base,

channel means formed in said housing enclosing conductive terminal means for receiving each of said terminal pins in electrically conductive engagement,

said front wall defining openings through which said terminal pins project for engagement with said conductive terminal means,

an inward facing rigid nonresilient latch fulcrum ledge formed on the forward edge of one of said top and bottom walls for engagement with a first one of said retaining means of said lamp base,

and an inward facing resilient latch formed on the forward edge of the other of said top and bottom walls

whereby engagement of said first one of said lamp base retaining means for pivoting movement about said rigid nonresilient latch fulcrum ledge, followed by angular pivoting movement of the lamp, advances the terminal pins angularly into the channel means until the second socket base retaining means latches with said resilient latch, thereby establishing reversible locking engagement of said socket with said retaining means of said lamp base.

4,799,897

IC TESTER SOCKET

Hiroyuki Mogi, and Kazuhisa Ozawa, both of Kawaguchi, Japan, assignors to Dai-ichi Seiko Kabushiki Kaisha, Kawaguchi, Japan

Filed Dec. 23, 1986, Ser. No. 946,584
Claims priority, application Japan, Dec. 30, 1985, 60-204384[U]; Sep. 1, 1986, 61-133941[U]
Int. Cl.[4] H01R 9/09
U.S. Cl. 439—264 10 Claims

1. An IC tester socket, comprising:

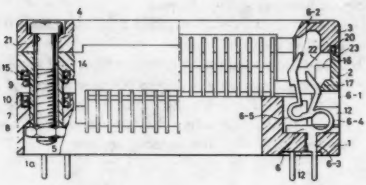
a socket body;

a number of contacting pins, each having a first spring portion of a predetermined resiliency and each extending from said socket body, the contacting pins being arranged to flex inwardly and outwardly relative to a central portion of the socket body and to mate respectively with a number of lead terminals of an IC package to be tested;

an urging member, mounted on said socket body for vertical movement above the socket body, the urging member having defined in its central portion, a cavity capable of accommodating said IC package and further having, along its peripheral portions, a number of jetties engaged respectively with said number of contacting pins in such a manner wherein the jetties can urge the contacting pins to flex inwardly while placing the first spring portion of each corresponding contacting pin in a strained state when the contacting pin is flexed inwardly; and

at least one spring, interposed between said socket body and said urging member, for elastically urging said socket body and said urging member to normally part away from each other with a predetermined interval therebetween,

wherein each of said contacting pins is provided with a leg portion fixedly inserted in said socket body, the first spring portion is formed above said leg portion in an arcuate shape and is contiguously joined to said leg portion, and wherein each of said contacting pins is further provided with: a second spring portion, joined contiguously to said first spring portion at a junction site and formed in an arcuate shape bulging in a direction opposite to the arcuate shape of said first spring portion; a first arm extending in a direction opposite to said leg portion from the junction site of said first spring portion and said second spring portion to engage its mating jetty so that the mating jetty can push inwardly aginst the first arm and thereby



urge the contacting pin to flex inwardly; and a second arm contiguously joined to said second spring portion and extending in a direction opposite to said leg portion for being brought into contact with its respective mating lead terminal of said IC package,

such that when said urging member is pushed downwardly against the force of said at least one spring, the first spring portion of each of said contacting pins is relieved at least partly from the strained state in which its corresponding first arm is pushed by a corresponding one of said jetties, to allow outward movement of each of said contacting pins by the resiliency of their corresponding first spring portions so that said IC package may be accommodated into said cavity, and

such that when the downward push on said urging member is relieved, said urging member is restored to its normally parted position relative to the socket body by said spring, said first arm is pushed inwardly by a corresponding one of said jetties, and said contacting pins are urged to flex inwardly against the resiliency of the first spring portion and to contact the lead terminals of said IC package which has been accommodated in said cavity.

4,799,898

FUSED PLUG

Henry Schick, Commack, N.Y., assignor to Gilbert Manufacturing Co., Long Island City, N.Y.

Filed Feb. 26, 1988, Ser. No. 160,660
Int. Cl.[4] H01R 4/24
U.S. Cl. 439—418 9 Claims

1. A fused electrical plug for use with an insulated current carrying lead wire pair for connection to a power source outlet comprising:

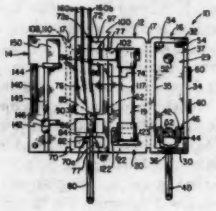
a first housing section of electrical insulating material having

(a) a first electrical terminal extending therefrom for insertion into said outlet and having a part within said housing section with a first barb thereon for piercing through the insluation of one of said lead wire pair to

make electrical connection with the current carrying wire therein,

(b) electrically conductive means for contacting one conductive part of an electrical fuse,

(c) terminal means electrically connected to said fuse contacting means and having a second barb thereon for piercing through the insulation of the other wire of said lead wire pair to make electrical connection with the current carrying wire therein,



a second housing section having:

(a) a second electrical terminal extensing therefrom for insertion into said outlet,

(b) electrically conductive means within said second housing section electrically connected to said second electrical terminal for contacting another conductive part of the electrical fuse when the second housing section is assembled to said first housing section.

4,799,899

CONNECTIVE STRUCTURE FOR CONDUCTIVE WIRES AND A METHOD OF MANUFACTURING THE SAME

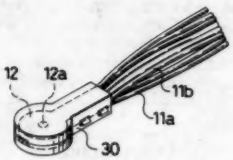
Takayoshi Endo, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Nov. 6, 1986, Ser. No. 927,514

Claims priority, application Japan, Nov. 6, 1985, 60-169800[U]

Int. Cl.[4] H01R *5/04*

U.S. Cl. 439—502 8 Claims



1. A connective structure for wires, comprising:

a plurality of insulated conductive wires each having a stripped end, the stripped ends being bundled together;

a solid metallic compound applied to the bundle ends such that any empty spaces between the bundled ends are filled by the metallic compound, whereby oxidation and corrosion will be prevented and bonding strength improved therebetween; and

a single terminal integrally formed on the bundle ends by bonding.

4,799,900

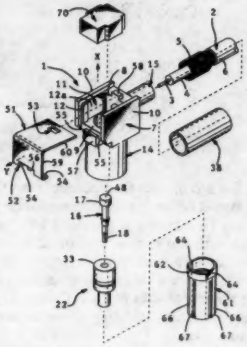
PUSH ON RIGHT ANGLE CONNECTOR

Randolph E. Capp, Mechanicsburg; Michael M. Johnescu, York; Ronald C. Laudig, Mechanicsburg; George W. Michael, Harrisburg, and Donald L. Smith, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 109,350, Oct. 15, 1987, Pat. No. 4,772,222. This application Apr. 4, 1988, Ser. No. 176,969

Int. Cl.[4] H01R *17/18*

U.S. Cl. 439—585 4 Claims



1. In a connector comprising, a conductive shell having a tool receiving cavity, an electrical conductor within the shell, a cable holder extending from the cavity for receiving an electrical cable for connection to the shell and for connection within the interior of the shell to the electrical conductor and a cover for covering the cavity; the improvement comprising;

the conductive shell is constructed with opposite sides and additional converging sides that bridge between the opposite sides to define a tool receiving cavity open continuously toward two orthogonal directions, the cover has a length for covering the tool receiving cavity and extending along the two orthogonal directions, and a conductive auxiliary shell engages and is encircled by the first recited shell.

4,799,901

ADAPTER HAVING TRANSIENT SUPPRESSION PROTECTION

Douglas J. Pirc, 75 Black Walnut Dr., Etters, Pa. 17319

Filed Jun. 30, 1988, Ser. No. 213,643

Int. Cl.[4] H01R *13/66*

U.S. Cl. 439—620 20 Claims

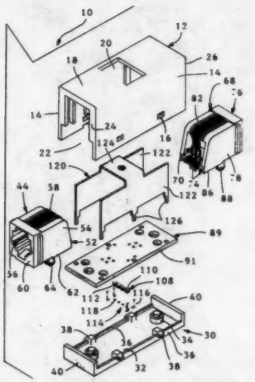
1. An electrical adaptor providing transient suppression capabilities comprising:

a dielectric substrate member having a plurality of conductors thereon, said conductors having first, second and intermediate portions;

a first connector subassembly comprising a plurality of first terminal members having first and second connecting portions and a first dielectric support member, said first terminal members being disposed in said first support member, said first support member being configured to mate with a first complementary mating connector such that said first connecting portions of said plurality of first terminal members are electrically engaged with respective complementary terminal members, said first connector subassembly being mounted to said substrate member such that said second connecting portions of said first terminal members are electrically connected to respective first portions of said substrate conductors;

a second connector subassembly comprising a plurality of

second terminal members having first and second connecting portions and a second dielectric second support member, said second terminal members being disposed in said second support member, said second support member being configured to mate with a second complementary mating connector such that said first connecting portions of said plurality of second terminal members are electrically engaged with respective complementary terminal members, said second connector subassembly being mounted to said substrate member such that said second connecting portions of said second terminal members are electrically connected to respective second portions of said substrate conductors, thus electrically interconnecting respective first and second terminal members of said first and second connector subassemblies;



electrical circuit component members which alter the voltage of an electrical signal going therethrough, said component members being mounted to said substrate member, each having first and second conductive portions with respective first conductive portions being in electrical engagement with said intermediate portion of a respective one of said substrate conductors;

means for grounding said component members, said grounding means being in electrical engagement with said second conductive portions of said component members; and

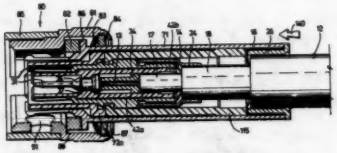
means for housing said substrate member, first and second connector subassemblies and said electrical circuit component members.

4,799,902

TRIAXIAL ELECTRICAL CABLE CONNECTOR

Ronald C. Landig, Mechanicsburg, and Donald L. Smith, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 19, 1987, Ser. No. 87,134
Int. Cl.[4] H01R *17/18*
U.S. Cl. 439—585 **15 Claims**



1. An electrical connector for terminating an electrical cable having a center conductor and a plurality of outer conductors comprising:

a center contact for electrical coupling to said center conductor of said cable;

an intermediate shell subassembly in the form of a first preassembled unit, said intermediate shell subassembly including an intermediate contact for electrical coupling to a first outer conductor of said cable, and an intermediate insulating member for electrically insulating said center contact from said intermediate contact, said intermediate insulating member being press-fitted within said intermediate contact so as to form said first preassembled unit;

an outer shell subassembly in the form of a second preassembled unit, said outer shell subassembly including an outer contact for electrical coupling to a second outer conductor of said cable, and an outer insulating member for electrically insulating said intermediate contact from said outer contact, said outer insulating member being press-fitted within said outer contact so as to form said second preassembled unit;

said intermediate contact and said intermediate insulating member comprising generally tubular-shaped members having axial passageways extending therethrough, said intermediate insulating member being positioned within said axial passageway of said intermediate contact, said intermediate insulating member having a first portion having an outside diameter which is less than the diameter of the axial passageway of said intermediate contact, and a second portion comprising an outwardly stepped portion having an inside diameter slightly greater than the inside diameter of said first portion, and having an outside diameter which is slightly greater than the diameter of said axial passageway in said intermediate contact, wherein only said second portion of said intermediate insulating member is press-fitted within said intermediate contact;

said outer contact and said outer insulating member also comprising generally tubular-shaped members having axial passageways extending therethrough;

said outer insulating member being positioned within said axial passageway of said outer contact;

said outer insulating member comprising a first front insulating section adapted to be easily received within said axial passageway o said outer contact, and a second rear insulating section adapted to be received within said axial passageway of said outer contact in press-fit relationship therewith;

first captivation means on said center contact and on said intermediate shell subassembly for securing said intermediate shell subassembly as a unit together with said center contact;

said first captivation means fixing the position of said center contact within said intermediate shell subassembly;

second captivation means on said intermediate shell subassembly and on said outer shell subassembly for securing said intermediate shell subassembly as a unit together with said outer shell subassembly as a unit;

said second captivation means fixing into position said intermediate shell subassembly within said outer shell subassembly;

an intermediate ferrule disposed between said first outer conductor and said outer shell subassembly for securing said first outer conductor to said intermediate shell subassembly;

a bushing for securing said second outer conductor to said outer shell subassembly;

said second portion of said intermediate insulating member comprises a minor portion of said intermediate insulating member;

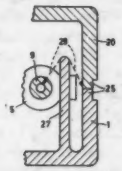
and said minor portion comprises an outwardly stepped portion also having an inside diameter which is slightly greater than the inside diameter of a major portion.

4,799,903

ELECTRICAL CONNECTOR WITH SAFETY PARTITION

Johannis M. Deurloo, Emmen, Netherlands, assignor to N.K.F. Groep B.V., Rijswijk, Netherlands

Continuation of Ser. No. 321,846, Nov. 16, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,180
Int. Cl.[4] H01R *13/15*
U.S. Cl. 439—696 2 Claims



1. An electrical connector for making permanent electrical connection to one end of an insulated stranded conductor from which insulating material is removed to expose a predefined length of the conductor strands, said connector including:

(a) a housing for fully enclosing the exposed conductor strands, said housing comprising complementary insulating shells abutting each other at edges thereof;

(b) a contact member extending through an opening in a wall of the housing and having a connection portion, enclosed by the housing, including an open end for receiving the exposed conductor strands, said open end being disposed in proximity to the abutting edges of the insulating shells; and

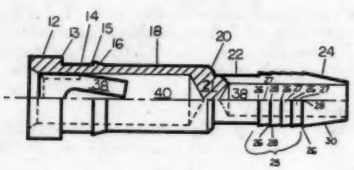
(c) an insulating partition secured within the housing and establishing a barrier for preventing any exposed conductor strands not received within the contact member from extending between the abutting edges of the insulating shells, said insulating partition being disposed between the connection portion of the contact member and said abutting edges of the insulating shells, the insulating partition extending transversely of the abutting edges and being dimensioned such that the shortest distance from the open end of the connection portion around said partition to the abutting edges is longer than the predefined lengths of the exposed conductor strands.

4,799,904

COMPLIANT TAIL CONNECTOR

Roger F. Sutcliffe, Northport, N.Y., assignor to Mill-Max MFg. Corp., Oyster Bay, N.Y.

Filed Jul. 29, 1987, Ser. No. 79,240
Int. Cl.[4] H01R *13/428*
U.S. Cl. 439—733 20 Claims



1. An electrical connector for insertion in a board mounting aperture having a coating, comprising;

an aperture engaging section having a plurality of barb like rings formed thereon;

the aperture engaging section having a cavity formed therein;

the aperture engaging section having an axially extending slot formed therein;

said aperture engaging section being forcibly and non-destructively engaged by the board mounting aperture coating such that a gas tight electrical connection is achieved without deforming the aperture coating.

3. The connector claimed in claim 1 including further:

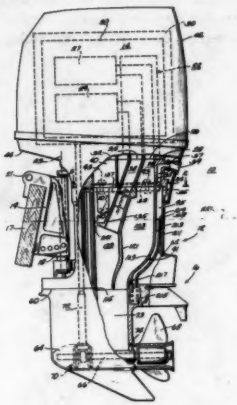
a cylindrical section formed axially above the barb like rings.

4,799,905

WATER JACKETED EXHAUST RELIEF SYSTEM FOR MARINE PROPULSION DEVICES

George L. Broughton, Waukegan, Ill.; Duane E. Rogers, Kenosha, Wis., and David W. Mate, McHenry, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 12, 1987, Ser. No. 62,435
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—89 30 Claims



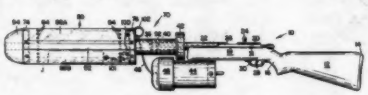
11. An inner exhaust gas housing adapted to be located within a drive shaft housing of a marine propulsion device, said inner exhaust gas housing including integral wall means defining an outer wall defining an open upper end, a first exhaust passage extending downwardly from said upper end and within said outer wall, a second exhaust passage extending downwardly from said upper end and within said outer wall, an expansion chamber adjacent said upper end and within said outer wall, first passage means communicating between said first and second exhaust passages and said expansion chamber, and second passage means communicating with said expansion chamber and with the atmosphere exterior to said inner exhaust gas housing.

4,799,906

RESCUE APPARATUS

Benjamin F. Perkins, Jr., Holyoke, Mass., assignor to Technical Equipment Associates of Florida, Inc., Palm Beach, Fla.

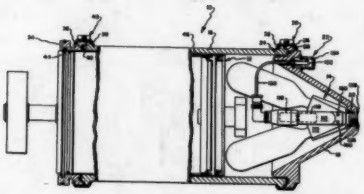
Filed Nov. 30, 1987, Ser. No. 126,401
Int. Cl.[4] B63C *9/26*
U.S. Cl. 441—85 3 Claims



1. Rescue apparatus comprising a launcher, a missile, a supply of line mounted on the launcher, the launcher being a non-lethal firearm adapted to fire a blank round and having a barrel with a bore closed at its muzzle end, the muzzle end having gas ports therein, the missile being sleevable on the barrel and having means for connecting the line thereto whereby when the firearm is discharged gas escapes from the bore through the gas ports to propel the missile into space carrying the line therewith, the missile being a launchable and hand-grippable and throwable article-carrier including a body for carrying rescue items and a tubular handle on the body and

a rupturable transparent tubular sleeve for confining the rescue items, the handle being sleevable on the launcher barrel for launching or alternatively being grippable and throwable by hand.

4,799,907
SURVIVAL APPARATUS
Roman Jankowiak, Cheektowaga, N.Y., and John A. Lutocka, Jr., Seminole, Fla., assignors to Conax Florida Corporation, St. Petersburg, Fla.
Filed Feb. 3, 1987, Ser. No. 10,455
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—42 **15 Claims**



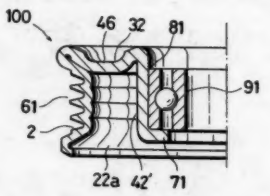
2. Survival apparatus (10) comprising:
a cylindrical member (16) open at one end and closed at the other end;
a survival canister assembly (12) disposed within said cylindrical member;
maintaining means (74) engaging said cylindrical member and said survival canister assembly and capable of normally maintaining said canister assembly within said cylindrical member;
piston means (55) disposed within said cylindrical member between the canister assembly and the closed end of said cylindrical member; and
gas discharge means (14) including water activated condition responsive means (22, 16), said gas discharge means being capable in response to an accident which places the apparatus in water of driving said piston means away from the closed end of said cylindrical member to cause the canister assembly to be rapidly ejected from the cylindrical member, said water activated condition responsive means including a sensor (22), said sensor projecting outwardly of said cylindrical member.

4,799,908
PERSONAL FLOTATION DEVICE WITH INNER MESH LAYER
John H. Lucius, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Feb. 26, 1987, Ser. No. 19,509
Int. Cl.[4] B63C *9/10*
U.S. Cl. 441—115 **7 Claims**

1. A personal flotation device comprjsing a back portion, right and left front portions, right and left shoulder portions connecting the back portion and the right and left front portions, and right and left side portions connecting the back portion and the right and left front portions, the back portion having an inner mesh layer adapted to lie against the back of the wearer of the personal flotation device and an outer layer of buoyant material, the inner mesh layer and the outer buoyant layer being connected together at the top and bottom thereof and being unconnected along at least a portion of the sides thereof, the length of the inner mesh layer between the top and bottom connections between the inner mesh layer and the outer buoyant layer being less than the length of the outer buoyant layer for spacing the outer buoyant layer away from

the inner mesh layer when the personal flotation device is worn whereby air can pass between the outer and inner layers.

4,799,909
SHEET METAL POLY-V PULLEY AND MANUFACTURING METHOD THEREOF
Masahiro Kanemitsu, Kobe, Japan, assignor to Kabushiki Kaisha Kanemitsu, Japan
Filed Jun. 17, 1987, Ser. No. 63,236
Int. Cl.[4] F16H *55/49*
U.S. Cl. 474—168 **3 Claims**



1. A sheet metal poly-V pulley adapted for rotation about an axis and having an annular bottom wall with a peripheral edge, a tubular peripheral wall integrally formed from the peripheral edge of the bottom wall and defining and open side of the peripheral wall opposite the bottom wall, and poly-V grooves formed in the peripheral wall, the poly-V pulley comprising:
a bearing fitting part having: a cylindrical portion projecting concentrically with the axis from the base wall toward the opening and terminating in an edge portion; and, an annular flange formed integrally with the cylindrical portion and projecting inwardly from the edge portion; and,
an annular bent part of the bottom wall, between the peripheral edge and the cylindrical portion, having a cross-section substantially throughout defining a convex surface facing the opening.

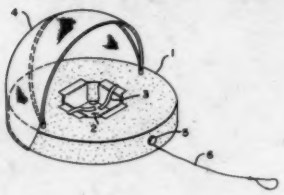
4,799,910
BABY RECREATIONAL FLOATING DEVICE
Dorothy Kellough, 36 Russell Ave., Beacon, N.Y. 12508
Filed Jun. 5, 1987, Ser. No. 58,409
Int. Cl.[4] B63C *9/00*
U.S. Cl. 441—131 **1 Claim**

1. A structure for floatation, supporting an infant in water, comprising a float circular foamed plastic float with symmetrical opening in the middle for child access; with supporting seat projecting downward a distance beneath said float;

said supporting seat means including a forward, side and rear upper portion connecting to said float;

said supporting seat means further including a pair of spaced leg openings through which an infant's leg may extend when the infant is seated in the structure;

said seat having a seat belt attached to prevent excessive forward movement and upward climbing of the infant;



wherein a collapsible hood canopy consisting of semi-circular lightweight hollow tubing is attached to frame anchors that are fixed embodiments of said floatation structure;

said hood canopy is encompassed with fabric and said fabric is stitched to the hood frame;

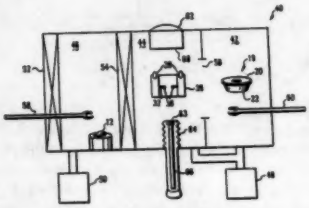
said fabric has an elastic hem provided, over which said canopy in an open position can be draped to enclose the lower portion of said floatation structure to provide shielding protection for an infant from the sun's rays.

4,799,911

IMAGE INTENSIFIER TUBE WITH INTEGRAL CCD DIGITAL READOUT

Edward J. Relder, Garland, Tex., assignor to Varo, Inc., Garland, Tex.

Filed Jul. 13, 1987, Ser. No. 72,684
Int. Cl.[4] H01J *9/12, 9/26*
U.S. Cl. 445—14 **24 Claims**



1. An apparatus for bonding a photoelectronic device to an image tube housing comprising:

a first chamber for processing the image tube housing;

a second chamber connected to said first chamber such that each chamber can be evacuated independently of the other;

means for heating said first and second chambers;

means for evacuating said first and second chambers; and

means for placing the photoelectronic device in contact with the image tube housing to create a seal therebetween at temperatures which will not degrade the photoelectric device.

13. A method of bonding a photoelectronic device to an image tube, comprising the steps of:

processing the housing of the image tube in a first chamber at a high temperature;

heating and evacuating a second chamber operably connectable to said first chamber;

cooling said second chamber to a temperature at which the photoelectronic device will not be damaged;

placing the photoelectronic device in said second chamber after said cooling step;

evacuating said second chamber to a pressure substantially equal to the pressure in said first chamber;

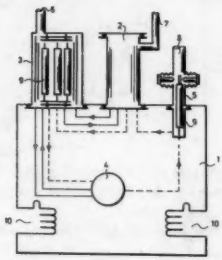
placing the photoelectric device in contact with the image tube housing and the photoelectronic device.

4,799,912

METHOD AND APPARATUS FOR PRODUCING DISCHARGE TUBES FOR SODIUM VAPOR LAMPS

Tamás Salgó , Budapest, Hungary, assignor to Tungsram Rézvénytársaság, Budapest, Hungary

Filed Jan. 23, 1987, Ser. No. 6,210
Claims priority, application Hungary, Feb. 12, 1986, 596/86
Int. Cl.[4] H01J *9/395, 9/40*
U.S. Cl. 445—26 **7 Claims**



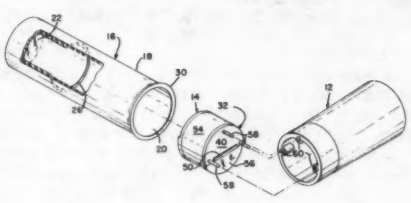
1. In a process for the manufacture of an alumina discharge tube for sodium vapor lamps, wherein an end plug electrode and a current lead in conductor are first sealed into the discharge tube, dopant additive is introduced into the discharge tube, then the discharge tube is evacuated, then is filled with a gas, and is then second sealed, wherein the improvement comprises conveying said discharge tube between separate areas within an enclosable space for carrying out each of said steps of first sealing, introducing, evacuating, filling, and second sealing, said conveying being all carried out in an atmosphere of pure inert gas which is in common connection with each of said areas.

4,799,913

GAME CALL HAVING A TWO-DIAPHRAGM SOUNDER AND LIP STRUCTURE

Gilbert H. Wolfe, 412 W. 15th St., New Cumberland, Pa. 17070

Filed May 29, 1987, Ser. No. 55,460
Int. Cl.[4] A63H *5/00*
U.S. Cl. 446—193 **12 Claims**



10. A two diaphragm sound chamber for use in a game call including a hollow cylindrical body having opposed end walls, a diaphragm opening in each end wall, a diaphragm normally

closing each opening, means for holding the diaphragms in place across the openings, each opening including a straight edge, said edges paralleling each other and said openings being located on opposite sides of the body, and a lip extending along one straight edge on the outside of the end wall and outwardly of the end wall for preventing the diaphragm from overlapping such end wall during vibration.

4,799,914

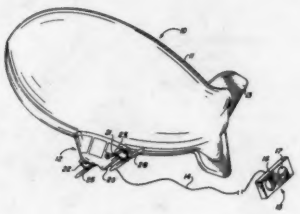
REMOTE CONTROL LIGHTER-THAN-AIR TOY WITH TETHER

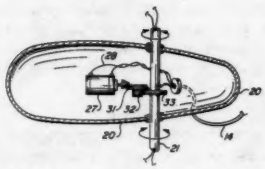
Jack M. Hutchinson, 504 Corinth, Bay, St. Louis, Miss. 39520

Filed Feb. 9, 1987, Ser. No. 12,314

Int. Cl.[4] A63H *3/06*; B64B *1/02*

U.S. Cl. 446—225 **4 Claims**





1. A remote control lighter-than-air toy comprising:

an inflatable container having a predetermined shape for holding a lighter-than-air gas;

a gondola removably attached to said inflatable container, said gondola having a strip of hook and loop material attached thereto and said inflatable container having a strip of hook and loop material attached thereto for removably attaching said gondola to said inflatable container;

a shaft extending through said gondola and rotatably supported thereto;

a reversible electric motor attached to each end portion of said shaft, each electric motor having a propeller attached thereto for rotation upon actuation of the electric motor, each said electric motor and propeller being attached to said shaft;

a tether line formed of a plurality of flexible conductor wires, each wire connected at the distal end to one of said electric motors;

a control box having a plurality of controls thereon connected to the other end of each of said tether line electric wires for remotely controlling each said electric motor separately; whereby said lighter-than-air toy can be remotely controlled with two propellers; and

a third electric motor mounted in said gondola and coupled to said shaft and connected through said tether line to said control box for rotating said shaft responsive to the application of power thereto.

4,799,915

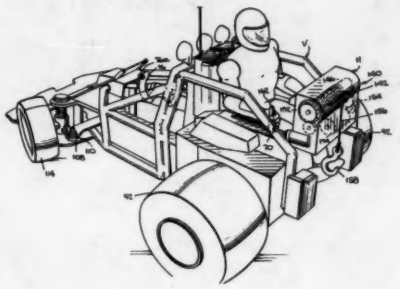
RADIO-CONTROLLED ROBOT OPERATOR FOR BATTERY-POWERED TOYS

Roger W. Lehmann, 18 Flintlock Ct., Bernardsville, N.J. 07924, and Michael I. Satten, 4 Farmers Rd., Kings Port, N.Y. 11024

Filed Dec. 4, 1987, Ser. No. 128,628

Int. Cl.[4] A63H *13/00, 17/12, 17/25, 17/39*

U.S. Cl. 446—279 **6 Claims**



1. In combination, a battery-powered, radio-controlled robot and a battery-powered action toy having multiple action control means controlled by said robot, comprising:

a. a robot having movable arms, including hands, and battery-powered motor drive means for individually actuating said arms,

b. a power and control pack electrically connected to said motor drive means, and having means for removably attaching said power and control pack on said robot,

c. said power and control rack comprising battery-powered, radio-controlled control means for controlling said motor drive means of the robot and thereby individually actuating said arms,

d. said hands having engaging means for individually engaging the multiple action control means of said action toy,

e. whereby said radio-controlled control means is adapted to control the multiple action control means of the action toy by individually actuating the arms of the robot.

4,799,916

MOTORLESS TOY VEHICLE AND PROPELLING TRACK

Robert S. McKay, 7420 Beckwith Rd., Morton Grove, Ill. 60053, and Dennis R. Dahm, 632 Oriole Dr., Streamwood, Ill. 60107

Filed Jun. 13, 1988, Ser. No. 205,740

Int. Cl.[4] A63H *18/00, 19/28*; B61B *13/00*; B61C *11/00*

U.S. Cl. 446—444 **12 Claims**

1. A toy vehicle and propelling track comprising:

a motorless toy vehicle including a gear housing having a drive system mounted therein:

said drive system including a drive gear mounted for rotation in said gear housing and a two way ratchet means for allowing said gear drive to rotate only in a first direction, only in a second direction opposite to said first direction, or to freely rotate in either direction;

a track adapted to support and to laterally direct said toy vehicle as it passes therealong;

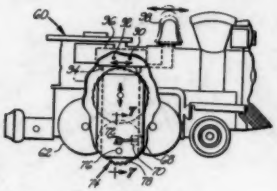
said track having a coextensive rack slidably mounted therein, said rack adapted to freely move in at least a limited reciprocating back and forth motion within said track and having spaced apart upwardly disposed teeth;

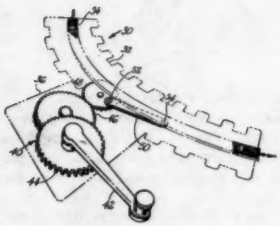
said drive system adapted, within said toy vehicle, to engage said drive gear and said rack teeth when said toy vehicle is placed atop said track;

a rack drive operably connected to said rack and adapted to

controllably reciprocate said rack back and forth within said track;

said toy vehicle propelled by said reciprocating rack in a first direction along said track when said ratchet means is positioned to allow said drive gear to rotate only in said first direction;





said toy vehicle propelled by said reciprocating rack in a second direction opposite to said first direction along said track when said ratchet means is positioned to allow said gear drive to rotate only in said second direction;

said toy vehicle moveable freely in either direction along said track when said ratchet means is positioned to allow said gear drive to freely rotate.

4,799,917

OSCILLATING HOOP AND STICK ASSEMBLY

Andrew O. Lentz, 1715 N. Bluff, Wichita, Kans. 67208

Filed Dec. 21, 1987, Ser. No. 135,671

Int. Cl.[4] A63H *33/02*

U.S. Cl. 446—450 **8 Claims**

1. An oscillating hoop and stick assembly, comprising:

(a) an actuator stick assembly having a hoop actuator member and a dual hoop assembly to be rolled along a support surface by said hoop actuator member;

(b) said dual hoop assembly having interconnected first and second hoop members secured to each other against relative movement having a single common diameter and all other diameters in said first hoop member offset in varying angular degrees from all other diameters in said second hoop member; and

(c) said first and second hoop members each having outer contact surfaces, said second hoop member spaced a thickness of said first hoop member with respect to the support surface at the locations intersected by said common diameter to alternately engage the support surface to achieve a wobbling movement when rolling therealong.

4,799,918

GEAR WHEEL

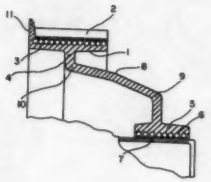
Stig Hallerbäck, Vastra Frolunda, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 27, 1987, Ser. No. 113,559

Claims priority, application Sweden, Oct. 27, 1986, 8604569

Int. Cl.[4] F16H *55/00*

U.S. Cl. 474—161 **5 Claims**



4. A method for producing a gear wheel made of plastic having an annular rim and a helix of a material having a coefficient of thermal expansion similar to or identical to steel in the gear rim adjacent its peripheral surface consisting of the steps of inserting the helix into a mold having a somewhat smaller circumferential diameter than the helix and filling the mold with the plastic material until cured.

4,799,919

COGGED BELT WITH REINFORCING MEMBERS

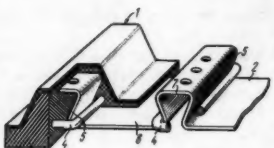
Gennady G. Kozachevsky, ulitsa Yakubovskogo, 18, korpus 2, kv. 271; Valery V. Guskov, ulitsa Kulman, 13, kv. 19; Vladimir P. Boikov, ulitsa Ya.Kolasa, 139, kv. 172; Oleg I. Molodan, ulitsa Slavinskogo, 15, kv. 63, and Svetlana I. Sizova, ulitsa Ya.Kolasa, 139, kv. 172, all of Minsk, U.S.S.R.

PCT No. PCT/SU85/00078, § 371 Date May 4, 1987, § 102(e) Date May 4, 1987, PCT Pub. No. WO87/01779, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 19, 1985, Ser. No. 82,863

Int. Cl.[4] F16G *1/12*

U.S. Cl. 474—205 **4 Claims**



1. A cogged belt comprising an elastic base (3) which incorporates a carrying element and a reinforcing element (2, 10, 15) which reinforces cogs (1, 11, 16, 17) of the belt and is in the form of a corrugated strip corrugations of which are embedded in the cogs (1, 11, 16, 17) of the belt, wherein said reinforcing element (2, 10, 15) has a width substantially equal to the width of the cog (1, 11, 16, 17), the carrying element being formed by locks (4, 12, 20) disposed in the zone of the corrugations (5, 9, 18, 19) for power-locking said reinforcing element (2, 10, 15) interposed between said corrugations (5, 9, 18, 19).

4,799,920

MINERALS SEPARATOR

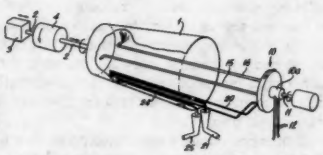
Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

Filed May 20, 1987, Ser. No. 51,648

Claims priority, application United Kingdom, May 22, 1986, 8612498

Int. Cl.[4] B04B *11/00*; B03B *5/32*

U.S. Cl. 494—23 23 Claims



1. A minerals separator comprising:

a body having a surface having the form of the inside of a cylinder arranged when rotating about its axis to have a force acting axially along it;

means for rotating the body about the axis of the cylinder to apply a centrifugal force exceeding g to said surface;

means for applying perturbations to the body;

means for applying a slurry of minerals-to-be-separated to the inside of the cylinder;

means for applying washing liquid to the inside of the cylinder; and

means for collecting separately fractions from different locations spaced axially along the cylinder comprising an assembly arranged to rotate within the cylinder at a relative speed therein which is small compared with the rotation speed of the body, the assembly and the body being equally subject to the perturbations and the assembly comprising a plurality of blade means each extending axially from an end of the cylinder to a respective desired location,

at least some of the means for applying the slurry and the washing liquid being mounted on the assembly.

4,799,921

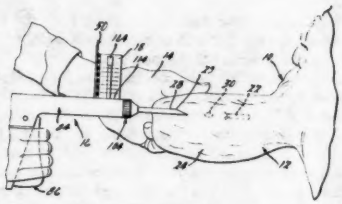
METHOD FOR IMPLANTING RETAINERS AND IMPLANTS IN CATTLE

Ronald F. Johnson, 3652 Brocker, and Norman E. Nicklas, 5120 Hurd, both of Metamora, Mich. 48455

Continuation of Ser. No. 898,583, Aug. 21, 1986, abandoned, which is a continuation of Ser. No. 642,525, Aug. 20, 1984, Pat. No. 4,659,326. This application Nov. 24, 1987, Ser. No. 125,811

Int. Cl.[4] A61M *5/18*

U.S. Cl. 604—51 12 Claims



9. A process for implantation of an implant in an animal comprising the steps of:

positioning a dissolvable implant and a retainer in a substantially abutting relationship;

injecting said dissolvable implant and said retainer into the animal such that said implant and retainer are disjoined from one another; and

enabling said implant to dissolve in said animal after a period of time.

4,799,922

BREAST PUMP INSERT

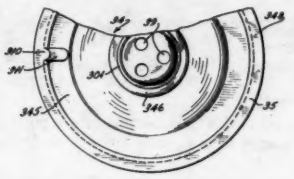
Christian Beer, Boniswil; Robert Riedweg, Lucerne, and Klaus Schlensog, Hünenberg, all of Switzerland, assignors to Ameda AG, Zug, Switzerland

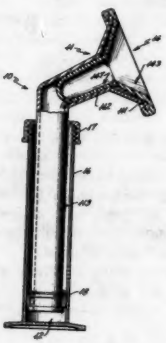
Filed Feb. 24, 1987, Ser. No. 17,864

Claims priority, application Switzerland, Feb. 28, 1986, 00825/86

Int. Cl.[4] A61M *1/06*

U.S. Cl. 604—74 6 Claims





1. In a breast pump of the type comprising a milk reservoir, an essentially rigid suction bell having a flared open end, and a suction means for temporarily reducing an ambient pressure within said pump, the improvement consisting essentially of an insert:

having a funnel shape with a conical mouth portion for sealing contact with a nipple encompassing area of a mother's breast when ambient pressure is reduced within said pump and an apex section for directing milk into the milk reservoir;

said conical mouth portion comprising a deformable conical wall portion capable of deflecting for pressing against the mother's breast in the encompassed area around the encompassed nipple when ambient pressure is reduced within said pump;

said apex section being thimble shaped with an essentially tubular side wall and an apertured end face wall, both of which are non-deformable when ambient pressure is reduced within said pump;

said funnel shape insert thereby defining an enclosure around said nipple-encompassing areas when ambient pressure is reduced within said pump, said enclosure being subjected to the pressure changes whereby mother's milk becomes drawn from the nipple into said insert and flows out therefrom through said apertured end face wall; and

means on said funnel shape insert for positioning said insert sealed and secured in said suction bell such that the outside surface of said conical wall portion thereof but not of said thimble portion thereof faces the non-varying ambient pressure outside of said suction bell, whereby operation of said suction means reduces ambient pressure inside said insert causing only said deformable conical wall portion thereof to deflect as aforesaid.

4,799,923

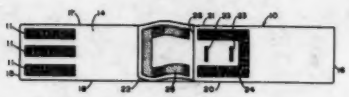
MEDICAL TUBE SECURING DEVICE

Myrna Campbell, 304 Acorn Dr., Lafayette, La. 70507

Filed Sep. 15, 1986, Ser. No. 906,889

Int. Cl.[4] A61M 25/02

U.S. Cl. 604—179 **4 Claims**



1. A securing device for a medical tube, a portion of which extends outwardly from a person's body, the device comprising:

a pouch means for receiving the upwardly extending portion of the tube and retaining it in a substantially stable position in relation to the person's body;

means for securing the pouch means in a substantially fixed relationship to the person's body, said means comprising an elongate flexible band having a front side, a back side, a first end and a second end, the ends being provided with mating fasteners adapted for securing the ends together in juxtaposed relationship and wherein the pouch means comprises a front portion and a back portion, the back portion being formed on the front side of the flexible band and the front portion being adapted for releasable fastening, in covering relationship, to the back portion, the back portion being provided with at least one opening for receiving the outwardly extending portion of the medical tube projecting therethrough; and

wherein the pouch means is securedly attached to the front side of the flexible band.

4,799,924

ASPIRATOR FOR COLLECTION OF BODILY FLUIDS

Richard Rosenblatt, 304 S. Oakhurst Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 903,017, Sep. 2, 1986. This application Jun. 22, 1988, Ser. No. 209,836

Int. Cl.[4] A61M 5/00

U.S. Cl. 604—181 **30 Claims**

1. An aspirator for removing bodily fluids through human suction and subsequent collection of the removed bodily fluids, comprising:

a. a container having a first separate chamber and a second separate chamber;

b. said first separate chamber being a vacuum creating chamber having a bottom wall, a generally circular side wall, and a top having an aperture therein;

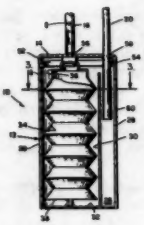
c. said second separate chamber being a mucus trap having a bottom wall, a generally circular side wall, and a top having an aperture therein;

d. the circular side wall of said vacuum creating chamber and the circular side wall of said mucus trap being tangent to each other along the location of an internal upstanding partition which extends from the bottom of the container to a distance between the bottom of the container and the two tops to a create a division opening between the vacuum creating chamber and the mucus trap to thereby permit gaseous communication but not liquid communication between the vacuum creating chamber and the mucus trap;

e. a first sidewall which is tangent to the cross sectional sidewall circles of said vacuum creating chamber and said mucus trap and serves to join the vacuum creating chamber and the mucus trap together along one side, the first sidewall further having a frangible score line along its length which may be broken to separate the vacuum creating chamber from the mucus trap;

f. a second sidewall which is tangent to the cross sectional sidewall circles of said vacuum creating chamber and said mucus trap and serves to join the vacuum creating chamber and the mucus trap together along the side opposite to the side joined by the first sidewall, the second sidewall further having a frangible score line along its length which may be broken to separate the vacuum creating chamber from the mucus trap;

g. a mating member comprising a housing having a central longitudinal passage extending through its length so as to provide two open ends in fluid communication with each other through said longitudinal passage, said mating member extending through said aperture in the top of said



vacuum creating chamber such that a first open end of the mating member protrudes through and above said top of said vacuum creating chamber and the second open end of the mating member extends into the vacuum creating chamber;

h. a first hollow tube having two ends, with the first end attached to said first end of the mating member and the second end attached to a mouthpiece;

i. a flexible bellows member comprising an integrally formed flexible bellows and terminating in a sealed bottom at one end and affixed to a bellows cap at its other end;

j. said bellows cap further comprising an opening through which it is attached to the second end of said mating member to thereby provide a closed system permitting gaseous communication therethrough between the mouthpiece, the second hollow tube, the mating member and the bellows, and to further permit the flexible bellows to extend into said vacuum creating chamber such that the flexible bellows is in its fully expanded position when in its equilibrium state; and

k. a second hollow tube having two ends, with the first end inserted through said aperture in the top of said mucus trap such that said second hollow tube extends for a dis-

tance inside the mucus trap and the second end extends for a distance beyond said top of said mucus trap and further comprises at least one opening adjacent its tip;

l. whereby in use, the second end of said second hollow tube is inserted into the patient from which bodily fluid is to be removed and the mouthpiece of the first hollow tube is sucked on by the person treating the patient, and suction through the mouthpiece will cause said flexible bellows to contract to thereby create a vacuum in the vacuum creating chamber which through gaseous communication with the mucus trap causes air and bodily fluids from the patient to be sucked into and remain in the mucus trap while the airtight system from the mouthpiece through the flexible bellows prevents any direct communication of air or bodily fluids between the patient and the person treating the patient.

4,799,925

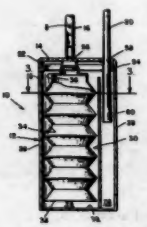
ASPIRATOR FOR COLLECTION OF BODILY FLUIDS

Richard Rosenblatt, 304 S. Oakhurst Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 903,017, Sep. 2, 1986. This application Jun. 22, 1988, Ser. No. 209,851

Int. Cl.[4] A61M 5/00

U.S. Cl. 604—181 **30 Claims**



1. An aspirator for removing bodily fluids through human suction and subsequent collection of the removed bodily fluids, comprising:

a. a vacuum creating container having a bottom wall, a side wall, and a top having a first aperture and a second aperture spaced apart from the first aperture therein;

b. a mucus trap container having a bottom wall, a side wall and a top having a first aperture and a second aperture spaced apart from the first aperture therein;

c. means for removably fastening said vacuum creating container and said mucus trap container together;

d. a mating member comprising a housing having a central longitudinal passage extending through its length so as to provide two open ends in fluid communication with each other through said longitudinal passage, said mating member extending through said first aperture in the top of said vacuum creating container such that a first open end of the mating member protrudes through and above said top of said vacuum creating container and the second open end of the mating member extends into the vacuum creating container;

e. a first hollow tube having two ends, with the first end attached to said first end of the mating member and the second end attached to a mouthpiece;

f. a flexible bellows member comprising an integrally formed flexible bellows and terminating in a sealed bottom at one end and affixed to a bellows cap at its other end;

g. said bellows cap further comprising an opening through which it is attached to the second end of said mating member to thereby provide a closed system permitting gaseous communication therethrough between the mouthpiece, the second hollow tube, the mating member and the bellows, and to further permit the flexible bellows to extend into said vacuum creating container such that the flexible bellows is in its fully expanded position when in its equilibrium state;

h. a second hollow tube having two ends, with the first end inserted through said second aperture of said mucus trap container such that said second hollow tube extends for a distance inside the container and the second end extends for a distance beyond said top of said mucus trap container and further comprises at least one opening adjacent its tip; and

i. a tube having two ends, with one end inserted into said second aperture in the top of said vacuum creating container and the other end inserted into said first aperture in the top of said mucus trap container, to thereby permit gaseous communication between the two containers;

j. whereby in use, the second end of said second hollow tube is inserted into the patient from which bodily fluid is to be removed and the mouthpiece of the first hollow tube is sucked on by the person treating the patient, and suction through the mouthpiece will cause said flexible bellows to contract to thereby create a vacuum in the vacuum creating container which through gaseous communication with the mucus trap container causes air and bodily fluids from the patient to be sucked into and remain in the mucus trap container while the airtight system from the mouthpiece through the flexible bellows prevents any direct communication of air or bodily fluids between the patient and the person treating the patient.

4,799,926

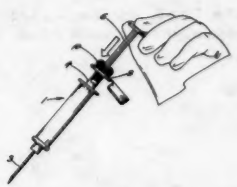
SYRINGE, HAVING SELF-CONTAINED, STERILE, MEDICATION APPLYING SWAB

Terry M. Haber, Lake Forest, Calif., assignor to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Oct. 13, 1987, Ser. No. 107,676

Int. Cl.[4] A61M 5/00

U.S. Cl. 604—187 **11 Claims**



1. A syringe comprising a hollow cylinder having distal and proximal ends, a hypodermic needle projecting outwardly from the distal cylinder end by which to administer an injection, a piston stem having a hollow, elongated body extending outwardly from the proximal cylinder and to be movable axially through said cylinder for expulsing the contents thereof and a flange interconnected with said body to control the movement of said stem through said cylinder, and means containing a supply of medication to be applied to a targeted tissue area of a patient prior to the administration of an injection at

the target area, said medication containing means carried on the flange of said piston stem and movable into the hollow body of said stem through an opening located between said flange and said body.

4,799,927

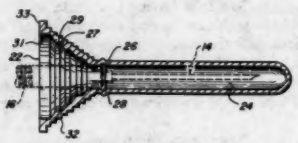
NEEDLE GUIDE AND PUNCTURE PROTECTOR

Donald F. Davis, 7411 SW. 147 Ct., Miami, Fla. 33193; Stuart Brodsky, 1600 Catron SE., Albuquerque, N. Mex. 85710, and Jeffrey Houska, 7204 Bangor NW., Albuquerque, N. Mex. 87120

Filed Nov. 23, 1987, Ser. No. 123,829

Int. Cl.[4] A61M 5/32

U.S. Cl. 604—192 **4 Claims**



1. A one-piece needle cover of rigid plastic material to receive and jacket a medical injection needle extending from one end of a needle barrel, said cover comprising:

a. a generally tubular body having a closed end and an enlarged open end, said tubular body defining an elongate needle socket extending from the closed end a distance greater than the needle length to be received within said socket,

b. means on the tubular body to nestingly engage the barrel and to cooperate with companionate means on the barrel to maintain the needle in said socket,

c. said enlarged open end defining a mouth of at least about three centimeters in diameter, and

d. said tubular body defining a throat converging towards the socket, said throat having guide means on the surface thereof to guide a needle being inserted into the cover, and said throat being provided with a surface stepped in successive rings each of a lesser diameter than the adjacent ring progressing from an outer largest diameter to a smaller diameter located at the socket.

4,799,928

UROLOGICAL DEVICE

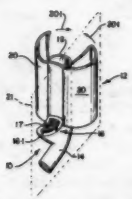
Ivan P. Crowley, Cape Province, South Africa, assignor to Femlib Medical Devices (Proprietary) Limited, East London, South Africa

Filed Dec. 3, 1986, Ser. No. 1,511

Claims priority, application South Africa, Dec. 6, 1985, 85/9367

Int. Cl.[4] A61F 5/44

U.S. Cl. 604—329 **7 Claims**



1. An incontinence device for a female user, which includes a drian tube having a mouth opening defined by the inner periphery of a thin delicate peripheral flange disposed transversely to the wall of the mouth opening, the flange being shaped to seat sealingly around the urethral meatus of a user; and

a vestibulo-vaginal insert extending away from the drain tube and being of resiliently flexible material expansible laterally in use within the vagina of the user, away from a medial plane to ensure that the mouth opening of the drain tube is held in register with the urethral meatus of the user, the vestibulo-vaginal insert comprising a central spine portion adjacent the drain tube mouth opening, and resilient lobe or wing portions of generally semi-circular section on either side of the spine portion, the lobe or wing portions being foldable in use inwardly from a relaxed shape against their inherent resilience to lie in laterally compressed shape against the spine portion, thereby providing the lateral expansibility to hold the drain tube mouth opening in register with the urethral meatus of the user.

4,799,929

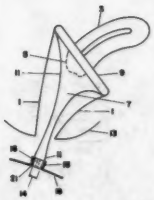
CATAMENIAL APPLIANCE

Charlene G. Knowles, Rte. 6, Box 244, Elizabethtown, Ky. 42701

Continuation-in-part of Ser. No. 948,104, Dec. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 723,466, Apr. 15, 1985, abandoned. This application Sep. 11, 1987, Ser. No. 96,514

Int. Cl.[4] A61F 5/44

U.S. Cl. 604—331 **18 Claims**



1. A catamenial appliance comprising:

flexible ring means insertable into the vagina of a female and adaptable to surround the cervix of said female said flexible ring means being biased to expand slightly outwardly after insertion over said cervix and having a relatively small cross sectional area whereby contact with the vaginal walls of said female is limited to a generally narrow band of contact defined by the outer periphery of said small cross sectional area of said flexible ring means;

collecting sheath means attached to said flexible ring means and extending downwardly therefrom to contain and direct menstrual fluids downwardly from said cervix through said vagina of said female, said sheath means being of sufficient length to permit the distal end of said sheath means to protrude from said vagina;

flexible, generally flat collector pouch means detachably connectable to said distal end of said sheath means, said collector pouch means including leak-proof internal reservoir means incorporated within said collector pouch means to receive and contain said menstrual fluids, and having receiving means on said internal reservoir means detachably connectable to said distal end of said sheath means to receive said menstrual fluids and direct said menstrual fluids into said internal reservoir means; and

connecting means on said distal end of said sheath means and on said receiving means of said reservoir means of said collector pouch means to permit said collector pouch means to be easily detached to and from said sheath means.

4,799,930

CARDIAC VALVE PROSTHESIS

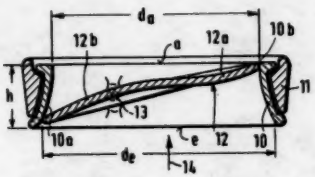
Martin Knoch, Aachen; Helmut Reul, Düren, and Günter Rau, Aachen, all of Fed. Rep. of Germany, assignors to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Filed Jan. 20, 1988, Ser. No. 145,882

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1987, 3701755

Int. Cl.[4] A61F 2/24

U.S. Cl. 623—2 8 Claims



1. Cardiac valve prosthesis for controlling fluid flow comprising:

a valve ring having an inner face and in which at least one valvular closing body is pivotally supported,

the inner face of the valve ring defining a nozzle channel having a cross section which smoothly, continuously and curvilinearly decreases in a direction perpendicular to the valve ring axis, whereby the inner face of the valve ring is continuously and increasingly constricted over its entire length in the direction of fluid flow.

4,799,931

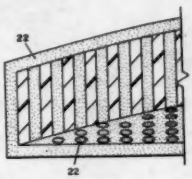
INTRACORNEAL LENS

Richard L. Lindstrom, 1065 W. Ferndale Rd., Wayzata, Minn. 55391

Filed May 14, 1986, Ser. No. 863,049

Int. Cl.[4] A61F 2/4

U.S. Cl. 623—5 3 Claims



1. Intracorneal lens comprising:

a. intracorneal lens optic of a high index of refraction polymer material selected from the group consisting of polysulfone, polyether ketone, or polycarbonate, the optic including a plurality of holes of a diameter in the range of 0.00001 mm to 1 mm; and,

b. a gas permeable biocompatible material coating on at least a portion of said lens and filling said holes, said coating and said filling material being selected from the group consisting of silicon, hydrogel or cellulose acetate butyrate.

4,799,932

OILING AGENTS BASED ON SULFOSUCCINIC ACID MONOAMIDES

Hans-Herbert Friese, Monheim; Uwe Ploog, Haan, and Wolfgang Prinz, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 64,894

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620780

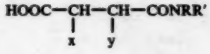
Int. Cl.[4] C14C *5/00*

U.S. Cl. 8—94.23 18 Claims

1. A method comprising imparting hydrophobicity and softness by

(A) treating said leather or skins by applying thereto minimally an oiling-effective amount of an agent consisting essentially of:

(1) at least one sulfosuccinic acid monoamide of the formula:



wherein

R and R' are independently H or a C_{12-24} alkyl, and one of x or y is SO_3H and the other is H; or an alkali or ammonium salt thereof.

4,799,933

PROCESS FOR THE TRICHROMATIC DYEING OF LEATHER

Fabio Beffa, Riehen, and Josef Koller, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

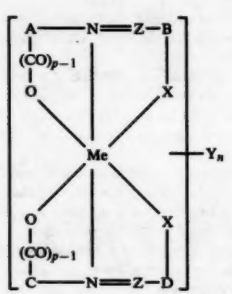
Filed Jan. 12, 1987, Ser. No. 2,361

Claims priority, application Switzerland, Jan. 21, 1986, 221/86

Int. Cl.[4] D06P *1/10, 3/30, 3/32*

U.S. Cl. 8—404 19 Claims

1. A process for the trichromatic dyeing of leather, comprising the step of contacting the leather with an aqueous dyebath which contains a red and a yellow dye, each of formula I



(I)

wherein

the substituents Z are each independently of the other nitrogen or a CH group,

A and C are each independently of the other a radical of the benzene or naphthalene series, which radical carries a hydroxyl or carboxyl group in the o-position to the azo or azomethine group,

B and D are each independently of the other the radical of a coupling component if Z is nitrogen, which coupling component carries the group X in the o- or alpha-position to the azo group, or are each independently of the other the radical of an o-hydroxyaldehyde if Z is the CH group,

the substituents X are each independently of the other oxygen or a group of the formula —NR—, in which R is hydrogen or a C_1–C_4alkyl group,

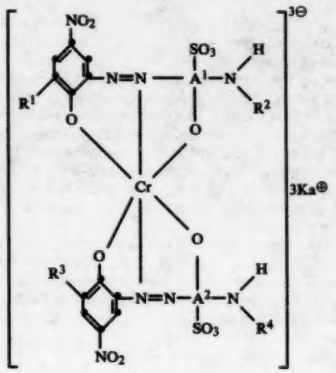
Me is chromium or cobalt,

Y is the SO_3H, COOH or PO_3H_2 group,

p is 1 or 2 and

n is an integer from 1 to 6,

and a grey dye of formula II



(II)

wherein

R^1 and R^3 are each independently of the other and at least one is sulfo,

A^1 and A^2 are each independently of the other the radical of 1-hydroxynaphthalene or 2-hydroxynaphthalene,

R^2 and R^4 are ech independently of the other hydrogen or a group of the formula —CO—$(O)_m$—E, in which E is C_1–C_3alkyl and m is 0 or 1, and

$Ka^{\oplus}$ is a cation.

4,799,934

SULFUR-CONTAINING NITROAMINOBENZENE DYES, PROCESS AND HAIR DYE COMPOSITIONS

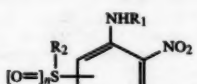
Mu-Ill Lim, Trumbull, and James S. Anderson, Danbury, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Oct. 30, 1987, Ser. No. 114,964

Int. Cl.[4] A61K *7/13;* C07C *149/42*

U.S. Cl. 8—414 32 Claims

1. A compound having the formula



I

and salts thereof, wherein

(a) R_1 and R_2 are the same or different and are selected from the group consisting of alkyl, hydroxyalkyl, polyhydroxyalkyl, aminoalkyl, and monoalkylaminoalkyl;

(b) n is 0, 1 or 2; and

(c) the group —S[=0]$_n$ occupies a position that is meta or para to the group NHR_1.

4,799,935

METHOD FOR DYEING IN HIGH-BOILING NONIONIC SOLVENTS

James K. Davis, Greensboro; Robert S. Craycroft, Sophia, and Tina V. Lorenzo, Jamestown, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 21, 1987, Ser. No. 40,825
Int. Cl.[4] C09B 67/10
U.S. Cl. 8—922 24 Claims

1. A continuous process for dyeing textiles made of synthetic thermoplastic fibers at elevated temperatures in a non-aqueous organic medium comprising:

(a) contacting the textile made of synthetic thermoplastic fibers to be dyed with a non-aqueous dyeing medium composed of (1) a high-boiling, nonionic solvent admixed with (2) at least one lower-boiling solvent having a boiling point in the range of about 100° F. to about 400° F., the lower boiling solvent constituting at least 40% by weight of the non-aqueous dyeing medium, and (3) a tinctorial amount of at least one soluble dyestuff dissolved in the solvent media; and

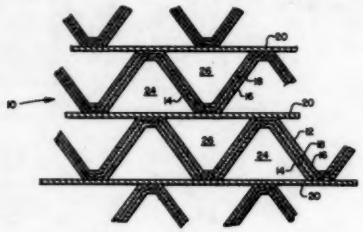
(b) heating the fabric after step (a) to a temperature above the boiling point of the lower-boiling solvent, causing the lower-boiling solvent to evaporate leaving a highly-concentrated dyeing medium evenly distributed on the textile, and causing the non-aqueous dyeing the textile to a uniform shade.

4,799,936

PROCESS OF FORMING CONDUCTIVE OXIDE LAYERS IN SOLID OXIDE FUEL CELLS

Brian Riley, Willimantic, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 19, 1987, Ser. No. 63,883
Int. Cl.[4] H01M 8/12
U.S. Cl. 29—623.1 2 Claims



2. A method of forming a monolithic solid oxide fuel cell module comprising the steps of:

a. forming individual thin layers of cathode material, anode material, electrolyte material and inner connector material, each layer being in the unsintered state and containing a binder,

b. laminating said layers of cathode material, anode material and electrotyle material into a triplex layer and forming said triplex layer into a desired shape,

c. placing at least one said triplex layer in contact with at least one interconnected layer to form an unsintered module containing binder,

d. gradually heating said unsintered module with microwaves while preventing radiation cooling of the surfaces in said unsintered module so as to gradually raise the temperature of said unsintered module to a temperature at which said binder is removed and maintaining said temperature until said binder is substantially removed,

e. further gradually heating said unsintered module with microwaves while still preventing radiation cooling of said surfaces in said unsintered module so as to gradually raise the temperature of said unsintered module to a temperature at which said anode material, cathode material, electrolyte material and interconnector material are sintered, and

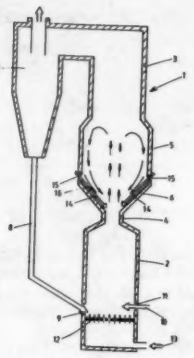
f. gradually cooling said sintered module to room temperature at a rate slow enough to prevent stresses by gradually reducing microwave power.

4,799,937

METHOD AND APPARATUS FOR GASIFYING CARBONACEOUS MATERIAL

Jorma J. Nieminen, Varkaus, Finland, assignor to A. Ahlstrom Corp., Varkaus, Finland

PCT No. PCT/FI87/00011, § 371 Date Sep. 22, 1987, § 102(e) Date Sep. 22, 1987, PCT Pub. No. WO87/04453, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 21, 1987, Ser. No. 102,142
Int. Cl.[4] C10J 3/54, 3/56
U.S. Cl. 48—62 R 13 Claims



1. A method of gasifying carbonaceous material in a circulating fluidized bed reactor having a lower chamber and an upper chamber interconnected by a throttled throat portion, the method comprising:

(a) supplying a solid carbonaceous material to a first fluided bed zone maintained in the lower chamber of the fluidized bed reactor;

(b) gasifying said carbonaceous material at a first temperature in said first zone by introducing a first gasifying agent and hot heat transfer particles into the lower chamber and producing a first zone gaseous effluent containing entrained particles;

(c) supplying said first zone effluent to a second fluidized bed zone of the spouting-type maintained in the upper chamber by passing the first zone effluent upwardly through the interconnecting throttled throat portion;

(d) gasifying unconverted carbon remaining in the entrained particles of the first zone effluent in the second zone at a second temperature which is higher than said first temperature by introducing a second gasifying agent and producing a product gas containing entrained hot particles;

(e) withdrawing said product gas from the upper chamber and separating the entrained hot particles from the product gas; and

(f) recycling the separated hot particles to the lower chamber for supplying the first zone with hot heat transfer particles.

10. A circulating fluidized bed reactor for gasifying carbonaceous material comprising:

a lower reactor chamber;

an upper reactor chamber including an upwardly and outwardly diverging bottom wall portion defining a spouting-type fluidized bed zone;

a throttled throat portion interconnecting the lower reactor chamber and the upper reactor chamber;

means for supplying a first gasifying agent and a carbonaceous material to said lower reactor chamber;

means for supplying a second gasifying agent to said upper reactor chamber in a downward direction along said diverging bottom wall portion;

means for exhausting product gases containing entrained particles from the upper reactor chamber; and

means for separating the particles entrained in the product gases exhausted from the upper reactor chamber and for recycling the separated particles to said lower reactor chamber.

4,799,938

α-AL_2O_3 ABRASIVE MATERIAL AND METHOD OF PREPARING THE SAME

Peter Janz, and Georg Gottschamel, both of Carinthia, Austria, assignors to Treibacher Chemische Werke AG, Treibach, Austria

Filed Sep. 22, 1987, Ser. No. 99,752
Claims priority, application Austria, Oct. 3, 1986, 2630/86
Int. Cl.[4] B24D *13/00*
U.S. Cl. 51—293 **12 Claims**

1. A method of preparing a sintered, microcrystalline abrasive material consisting essentially of α-Al_2O_3, said abrasive material consisting of at least 99.5%, by weight, of α-Al_2O_3 crystallites having a size of less than 2μ and the material having a density of at least 97% of the theoretical density, which comprises the steps of

(a) stirring a highly dispersed α-aluminum oxide hydrate into a dilute acidic solution until a suspension of the α-aluminum oxide hydrate has been formed,

(b) subjecting the suspension to a vacuum venting to remove occluded air therefrom,

(c) dispersing the vented suspension to disagglomerate the same,

(d) removing any residual coarse particles from the dispersed suspension,

(e) drying the dispersed suspension to obtain a dry material,

(f) comminuting the dried material, and

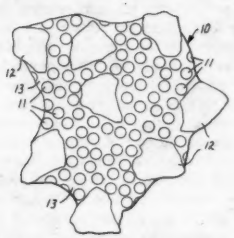
(g) sintering the dried material at a temperature between 1000° C. and 1500° C.

4,799,939

ERODABLE AGGLOMERATES AND ABRASIVE PRODUCTS CONTAINING THE SAME

Ulrich Bloecher, St. Paul, Minn., and Ernest J. Duwell, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 420,690, Feb. 26, 1987, Pat. No. 4,528,522. This application Mar. 19, 1987, Ser. No. 27,784
Int. Cl.[4] B24D *3/00*
U.S. Cl. 51—293 **22 Claims**



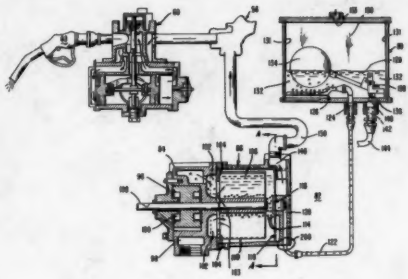
1. An abrasive article comprising erodable agglomerates comprising a multiplicity of individual grains of abrasive mineral randomly distributed in an erodable matrix comprising very small, erodable, crush resistant hollow bodies and an erodable binder.

4,799,940

CENTRIFUGAL SYSTEM WITH PUMP FOR SEPARATING AIR FROM FUEL

Joseph B. Millikan, Sophia, N.C., assignor to Gilbarco, Inc., Greensboro, N.C.

Continuation of Ser. No. 113,368, Oct. 21, 1987, abandoned, which is a continuation of Ser. No. 804,831, Dec. 5, 1985, abandoned. This application Jun. 8, 1988, Ser. No. 205,629
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—52 **10 Claims**



1. Apparatus for both pumping a liquid and removing air from the liquid to permit accurate measurement of the volume of liquid being pumped, comprising:

vane pump means for pumping a liquid, said vane pump means including an inlet port, a drive shaft, and an outlet chamber, and a rotor rigidly mounted upon said drive shaft, said drive shaft extending outward from said outlet chamber, said vane pump means producing a relatively high pressure liquid flow at said outlet chamber compared to said inlet port; and

Centrifuge means for separating air from said liquid, said centrifuge means including curved blade impeller means rigidly mounted upon the extension of said drive shaft from said vane pump means, a front baffle plate rigidly connected to said vane pump means and covering said outlet chamber thereof, said drive shaft extending through a centrally located hole in said front baffle plate, a centrifuge chamber casing rigidly attached to said front baffle plate and enclosing said impeller means, a liquid outlet port located on the side of said casing rearward from said front baffle plate, an end cap rigidly connecting across the back of said casing, and a rear baffle plate rigidly connected to said end cap between said end cap and said impeller means, sad rear baffle plate having a centrally located hole positioned opposite the end of said drive shaft and concentric with a centrally located vent hole in said end cap, said curved blade impeller means being arranged for causing the liquid and air to enter a relatively low pressure region within said centrifuge chamber casing in a direction parallel with and adjacent the longitudinal axis of said impeller means, said impeller means causing air to be separated from the liquid, the air being force at lowered pressured rearward along a central axial portion of said impeller for exiting into the hole in said rear baffle plate for entry into and venting from said vent hole of said end cap, the liquid substantially free of said air being forced at increased pressure against an inside wall of said centrifuge chamber casing for delivery to said liquid outlet port at relatively higher pressure than said air,

metering means coupled to said liquid outlet port for measuring liquid flowing from said outlet port substantially free of said air, and

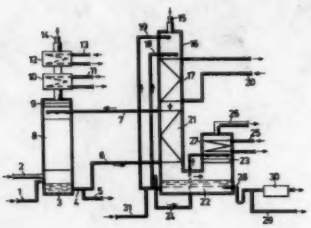
sump means connected to said vent hole or said end cap of said centrifuge means for receiving both low pressure air and residual liquid from said centrifuge means, for completing the removal of air from said liquid by permitting the air to "bubble-up" and out of the residual liquid.

4,799,941

METHOD AND ARRANGEMENT FOR CONDENSING FLUE GASES

Mats O. J. Westermark, Tiby, Sweden, assignor to Scandiaconsult AB, Stockholm, Sweden

Filed Oct. 23, 1987, Ser. No. 111,760
Claims priority, application Sweden, Oct. 23, 1986, 8604524
Int. Cl.[4] B01D *47/00*
U.S. Cl. 55—90 **10 Claims**



1. A method for condensing flue gas in combustion plants, comprising the following combination of steps,

(a) cooling and humidifying flue gas by injecting water thereinto,

(b) cooling and condensing water vapour from the flue gas in a first condensing stage, by indirect heat exchange with return water from a hot water circuit,

(c) further cooling and condensing water vapour from the flue gas in a second condensing stage, by indirect heat exchange with water from a combustion air humidifier,

(d) heating and humidifying combustion air in the humidifier by direct contact with heated return water from the second condensing stage.

4,799,942

CRYSTALLINE GALLOPHOSPHATE COMPOSITIONS

Stephen T. Wilson, Shrub Oak; Naomi A. Woodard, Peekskill, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, DesPlains, Ill.

Division of Ser. No. 811,282, Dec. 20, 1985, Pat. No. 4,690,808. This application May 26, 1987, Ser. No. 53,735
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—35 **8 Claims**

1. Process for separating molecular species having effective molecular diameter of less than about 10 Angstroms from admixture with less polar molecular species, which process comprises contacting a mixture of molecular species, said mixture of molecular species comprising at least a first species having a lesser degree of polarity and a second species having a greater degree of polarity, with at least one gallophosphate, said gallophosphate being at least partially dehydrated at the initiation of contact having a pore diameter large enough to adsorb said second molecular species, whereby molecules of said second molecular species are selectively adsorbed into the intracrystalline pore system thereof while molecules of said first molecular species are selectively excluded from said pore system, said molecular sieve being a crystalline gallophosphate composition having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is

$$mR: Ga_2O_3: 1.0 \pm 0.2\ P_2O_5$$

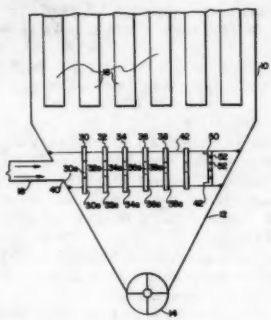
wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from 0.02 to 0.3 and represents the moles of "R"; said framework structures being microporous in which the pores have nominal diameters within the range of about 3 to about 10 Angstroms.

4,799,943

GAS STREAM DIFFUSING AND DISTRIBUTION APPARATUS

Giambattista Giusti, 50 The Fellsway, New Providence, N.J. 07974; Thomas V. Reinauer, 9 Dunnder Dr., Summit, N.J. 07901, and Raymond J. DeHont, 4 Brent Pl., Succasunna, N.J. 07876

Filed Jun. 17, 1987, Ser. No. 63,009
Int. Cl.[4] B01D *46/00*
U.S. Cl. 55—308 **11 Claims**



1. Apparatus for diffusing and distributing an incoming gaseous carrier having particulate matter entrained therein and a filtering device for separating said particulate matter for said gaseous carrier,

said filtering device including a gas impervious perimetric housing having a plurality of filters disposed in the upper portion thereof for effecting separation of said particulate matter from said gaseous carrier and a particulate matter collection hopper disposed in the lower portion of said housing and below said filters therein for reception of said particulate matter separated from said gaseous carrier by said filters,

the lower portion of said housing having an inlet opening therein disposed in fluid communication with a gas stream conveying conduit through which said gaseous carrier in the form of a confined high speed gas stream is introduced into said housing below said filters and in a direction substantially perpendicular to the longitudinal axis of said housing,

said diffusing and distributing apparatus comprising,

a plurality of perimetrically unconfined orifice plates disposed in parallel spaced apart relation in the path of the incoming high speed gas stream in substantially perpendicular relation to the direction of flow thereof;

the first of said plurality of orifice plates being disposed in separated spaced relation from said inlet opening and the remainder thereof extending substantially across the full extent of the lower portion of said housing,

means for supporting said plurality of orifice plates,

each of said orifice plates being a disc having a central aperture therein disposed in the path of said incoming high speed gas stream surrounded by a free standing and unconfined perimetric border portion of planar character disposed substantially perpendicular to the direction of incoming gas stream flow, and wherein

each of said apertures in said orifice plate being of progressively lesser open cross sectional area in the direction of gas stream flow,

4,799,860
WIND-ENERGY CONVERTER

Michael Martin, Darmstadt, Fed. Rep. of Germany, assignor to Herter Rotor Marketing Division & Co. Beteiligungsgesellschaft mbH, Frankfurt, Fed. Rep. of Germany

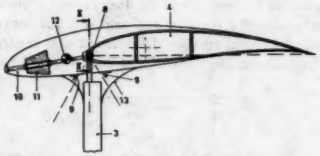
PCT No. PCT/EP86/00190, § 371 Date Dec. 4, 1986, § 102(e) Date Dec. 4, 1986, PCT Pub. No. WO86/05846, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 27, 1986, Ser. No. 5,441

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512420

Int. Cl.[4] F03D *3/06*

U.S. Cl. 416—119 4 Claims



1. A wind energy converter, comprising:
a rotor rotatable about a vertical first axis,
at least one rotor arm projecting transversely outwardly from said rotor,
a substantially vertically oriented propulsive vane mounted adjacent an outer end of said rotor arm and arranged to react to air flow to produce rotation of said rotor in a direction of rotation, and
rotary coupling means connecting said vane to said rotor arm for free rotary movement relative thereto about a substantially vertical second axis,
said vane being configured asymmetrically about its chord and including a balance weight positioned ahead of said second axis with reference to said direction of rotation such that said vane defines a center of gravity disposed forwardly of said second axis with reference to said direction of rotation.

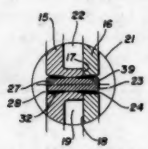
4,799,861
PUMP

James J. Psugh, Jr., Palmer, and Charles J. Hinckley, Ware, both of Mass., assignors to Warren Pumps, Inc., Warren, Mass.

Filed Oct. 29, 1987, Ser. No. 114,818

Int. Cl.[4] F04D *29/28*

U.S. Cl. 416—186 R 1 Claim



1. Pump comprising:
(a) a housing having a chamber,
(b) a spindle extending through the chamber, and mounted for rotation in bearings,
(c) an impeller mounted on the spindle for rotation therewith, the impeller consisting of two parts having facing surfaces, wherein the two parts are of generally disk-like shape with peripheries that are coaxial of the said spindle, the surfaces being accurately formed with open channels, the two parts being connected by a joint, so that the said channels combine to form passages, and
(d) pegs extending through bores in the two parts to form the said joint, wherein the pegs and bores are accurately formed to provide a close fit, wherein the pegs are joined by an electron beam weld in the said bores, wherein the bores are formed in both of the said parts, so that the parts are accurately located relative to one another, wherein the bores extend axially through the two parts, wherein each peg extends completely through a bore in one part and a congruent bore in the other part, wherein the ends of each peg are provided with bevels which lie in the outer entrance of both bores to define an annular groove of triangular cross-section between the peg and the bore at the said entrance, and wherein the electron beam weld is located in the said groove.

4,799,862
IMPELLERS

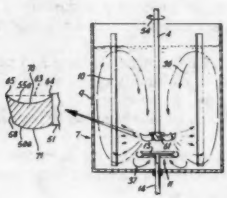
John F. Davidson; Keshavan Niranjan, and Aniruddha B. Pandit, all of Cambridge, England, assignors to National Research Development Corporation, London, England

Filed Jul. 15, 1987, Ser. No. 73,823

Claims priority, application United Kingdom, Jul. 18, 1986, 8617569

Int. Cl.[4] B01F *5/10*

U.S. Cl. 416—242 10 Claims



1. An impeller comprising:
a hub, adapted to rotate in a predetermined direction about an axis of rotation;
a plurality of blades radiating symmetrically from said hub; each said blade being of elongated shape and having a longitudinal axis, the length dimension of said each blade having opposite first and second ends;
said first end of each said blade being attached to said hub, and said second end constituting the tip of each said blade;
each said blade being of substantially uniform cross-section throughout said length;
each blade extending from said hub in a direction wherein said longitudinal axis thereof extends at an angle to said axis of rotation of said hub;
in which said longitudinal axis is curved;
and in which each said blade is so disposed relative to said hub that said curved longitudinal axis results in said blade having a first and swept-back curvature relative to said predetermined direction of rotation of said hub and visible when said blade is viewed in a direction parallel to said axis of rotation, and a second curvature visible when said blade is viewed in a direction normal to a radius to said axis of rotation at the point where said blade radiates from said hub.

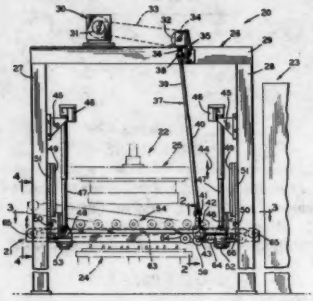
rent to said servomotor with a predetermined change of time in accordance with said start and stop signals for controlling the angular speed of said servo and for stopping the supply of said drive current to said servomotor when said servomotor is subject to an excess load and said drive current exceeds a predetermined value, said servomotor being an AC servomotor driven by said drive current of said servo-control means.

4,799,948

ADJUSTABLE BEARING RAIL APPARATUS FOR BENDING GLASS SHEETS

Allan T. Enk, and Charles H. Gerber, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Aug. 20, 1987, Ser. No. 87,210
Int. Cl.[4] C03B *23/033*
U.S. Cl. 65—286 **20 Claims**



1. An apparatus for supporting a plurality of conveyor rolls for conveying glass sheets through a bending station comprising:

a spaced pair of bearing rails adapted to support opposite ends of each of a plurality of glass sheet conveyor rolls:

a ground engaging framework;

a bracket attached to said framework for each and of each said bearing rail; and

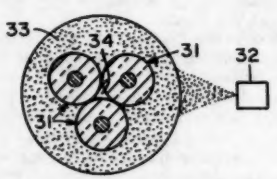
means coupled to said bracket for independently adjusting a position of each end of each said bearing rail with respect to said framework.

4,799,949

METHOD OF MAKING LOW LOSS FIBER OPTIC COUPLER

Donald B. Keck, Big Flats, N.Y.; Donald R. Lyons, Stanford, Calif., and Daniel A. Nolan, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 15, 1985, Ser. No. 765,652
Int. Cl.[4] C03B *37/027, 37/02, 37/018*
U.S. Cl. 65—3.12 **15 Claims**



1. A method of fabricating a fiber optic coupler comprising the steps of

forming a coupler preform having a plurality of spaced glass cores extending longitudinally through a single matrix of glass having a refractive index lower than that of said glass cores,

heating and stretching said preform to form a glass rod in which said cores are embedded in said single glass matrix throughout their lengths, the diameter of said glass rod and the diameters of said cores being substantially uniform throughout the length of said rod,

severing said rod into a plurality of units having two endfaces in which units the cores are flush with the endfaces of said units,

applying heat to the longitudinal central region of each of said units, and

pulling one end of each of said units relative to the other to elongate and taper inwardly the heated central region thereof, whereby the cores of said unit are more closely spaced and are of smaller diameter at said central region than they are at the ends of said unit.

4,799,950

PLANT GROWTH REGULATING COMPOSITION

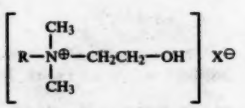
Akinori Suzuki, Chiba; Suong Be Hyeon, Uraws; Toshio Kajita, Yachiyo; Masakazu Furushima, Nagareyama, and Akinori Tanaka, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 5,279
Claims priority, application Japan, Jan. 21, 1986, 61-8978
Int. Cl.[4] A01N *43/08*
U.S. Cl. 71—89 **7 Claims**

1. A plant growth regulating composition for the promotion of growth, germination, root formation and thickening growth, said composition comprising as an active ingredient a combination of

(a) at least one gibberellin-type plant hormone selected from the group consisting of gibberellin A_3 and gibberellin A_4, and

(b) at leat one compound selected from the compounds of the general formula



(I)

wherein R represents a C_1–C_5 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl or benzyl group, and X represents a hydroxy group or chlorine or bromine atom,

wherein the weight ratio of the gibberellin type plant hormone to the compound of the above formula (I) is from 1:0.1 to 1:100.

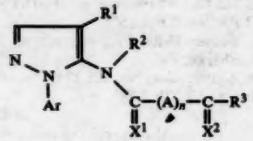
4,799,951

5-ACYLAMINO-PYRAZOLE DERIVATIVES, COMPOSITION CONTAINING THEM AND HERBICIDAL METHOD OF USING THEM

Jörg Stetter, Wuppertal; Otto Schallner, Monheim; Reinhold Gehring, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach; Klaus Lürssen, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1987, Ser. No. 113,298
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637710
Int. Cl.[4] A01N *43/56*; C07D *231/40*
U.S. Cl. 71—92 **9 Claims**

1. A 5-acylamino-pyrazole derivative



in which

R^1 represents hydrogen, nitro, fluorine, chlorine, bromine or iodine,

R^2 represents hydrogen, or represents straight-chain or branched alkyll with to 12 carbon atoms, or represents in each case straight-chain or branched alkenyl or alkinyl with in each case 3 to 8 carbon atoms, or represents cycloalkyl which has 3 to 8 carbon atoms and is optionally mono- or polysubstituted by identical or different C_1-C_4-alkyl radicals,

R^3 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 8 carbon atoms, or represented cycloalkyl which has 3 to 8 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different C_1–C_4-alkyl radicals, or represents aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl and alkoxy with in each case 1 to 4 carbon atoms,

Ar represents 2-pyridyl, 3-pyridyl or 4-pyridyl, or phenyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, in each case monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy and alkoxycarbonyl with in each case 1 to 4 carbon atoms in the alkyl part, in each case straight-chain or branched halogenoalkyl and halogenoalkoxy with in each case 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, and a radical —S(O)m—R^8,

wherein

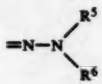
R^8 represents amino, or represents in each case straight-chain or branched alkyl, alkylamino, dialkylamino or halogenoalkyl with in each case 1to 4 carbon atoms in the individual alkyl parts and, in the case of halogenoalkyl, with 1 to 9 identical or different halogen atoms and

m represents the number 0, 1 or 2,

X^1 represents oxygen or sulphur,

A represents a straight-chain or branched alkylene bridge which has 1 to 6 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents from the group consisting of phenyl, which is optionally monosubstituted or polysubstituted by identical or different halogen or C_1–C_4-alkyl radicals, and halogen,

n represents the number 0 or 1 and X^2 represents oxygen, or represents a radical =N—O—R^4, or represents a radical



wherein

R^4 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 8 carbon atoms, or represents in each case straight-chain or branched alkenyl or alkinyl with in each case 3 to 8 carbon atoms, or represents in each case straight-chain or branched halogenoalkyl with 1 to 8 carbon atoms or halogenolkenyl with 3 to 8 carbon atoms and in each case 1 to 9 identical or different halogen atoms, or represents in each case straight-chain or branched alkoxyalkyl or alkylthioalkyl with in each case 1 to 4 carbon atoms in the individual alkyl parts, or represents aralkyl with 1 to 4 carbon atoms in the alkyl part or aryl, with in each case 6 to 10 carbon atoms in the aryl part and in each case monosubstituted or polysubstituted in the aryl part by identical or different substituents selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl or alkoxy with in each case 1 to 4 carbon atoms,

R^5 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 6 carbon atoms and

R^6 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 6 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents, or represents a radical

possible substitutents on the aryl being those mentioned for R^4,

X^3 represents oxygen or sulphur and

R^7 represents hydrogen, or represents in each case straight-chain or branched alkyl, alkoxy, alkylamino or dialkylamino with in each case 1 to 8 carbon atoms in the individual alkyl parts.

8. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a 5-acylamino-pyrazole derivative according to claim 1.

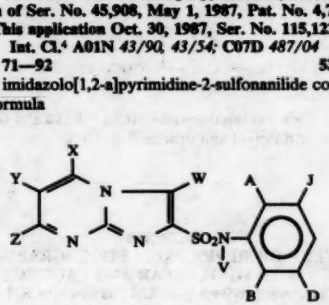
4,799,952

HERBICIDAL IMIDAZOLO(1,2-A)PYRIMIDINE-2-SULFONANILIDES

Norman R. Pearson, Walnut Creek; Shannon L. Bartley, Concord, and William A. Kleschick, Martinez, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 45,908, May 1, 1987, Pat. No. 4,731,446.
This application Oct. 30, 1987, Ser. No. 115,122
Int. Cl.[4] A01N *43/90*, *43/54*; C07D *487/04*
U.S. Cl. 71—92 53 Claims

1. An imidazolo[1,2-a]pyrimidine-2-sulfonanilide compound of the formula



wherein

X and Z each, independently represents R, OR^3, SR^3, NR^1R^2, F, Cl, Br, or CN;

Y represents R, OR^3, F, Cl, Br, or CN;

W represents R, OR, SO_nR^3, NR^1R^2, F, Cl, Br, NO_2, CN, C(O)E, phenyl, phenoxy, or phenylthio, each phenyl, phenoxy and phenylthio optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

A represents F, Cl, Br, C(O)E, C_1–C_4 haloalkyl, NO_2, CN, SOR^3, or SO_2R^3;

B represents F, Cl, Br, CN, R, OR^3, SR^3, NR^1R^2, phenyl, phenoxy, or phenylthio, each phenyl, phenoxy and phenylthio optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

J and D each, independently represents R, F, Cl, Br, or C(O)E;

R represents H, C_1–C_4 alkyl or C_1–C_4 haloalkyl;
R^1 and R^2 each, independently represents H or C_1–C_4 alkyl;
R^3 represents C_1–C_4 alkyl or C_1–C_4 haloalkyl;
E represents R, OR, SR, NR^1R^2, or phenyl;
V represents H, C(O)R^3, or benzyl;
n represents an integer of 0, 1 or 2; and
when V represents H, the agriculturally acceptable salts thereof.

4,799,953

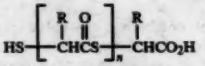
METHOD FOR REGULATING PLANT GROWTH USING SULFUR-CONTAINING ORGANIC ACIDS

Morris J. Danzig, Northbrook, and Alan M. Kinnersley, Bedford Park, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 8, 1987, Ser. No. 105,937
Int. Cl.[4] A01N *31/00, 37/00;* C07C *153/09, 53/00*
U.S. Cl. 71—98 8 Claims

1. A compound represented by the formula

I



where n is a small whole number from 1 to 10 and the Rs are the same or different and denote H or CH_3.

2. A method for increasing the rate of growth of a plant which comprises supplying to the plant an effective amount of one or more sulfur-containing acids selected from the group consisting of thiolactic acid, 2,2'-dithiobisacetic acid, 2,2'-dithiobispropanoic acid, and a compound represented by the formula

I

where n is a small whole number from 1 to 10 and the Rs are the same or different and denote H or CH_3.

4,799,954

RECOVERY OF SILVER FROM PHOTOGRAPHIC FILM WITH HIGH SHEAR AND CAUSTIC

Jerome Hochberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 14,711, Feb. 13, 1987, abandoned. This application Mar. 8, 1988, Ser. No. 168,541
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 P 5 Claims

1. A process for the recovery of metallic silver from photographic film having a polymeric base, a surface coating which provides adhesion for a silver emulsion layer, and a silver emulsion layer containing gelatin, which process comprises:
(a) mixing pieces of the film with a caustic alkali solution heated to a temperature of about from 140° F. to 200° F.,
(b) subjecting the mixture to conditions of high shear for a period sufficient to remove the surface coating from the base and to substantially completely reduce the silver halides in the emulsion layer to metallic silver,
(c) separating the aqueous liquid containing the removed silver and surface coating from the film pieces, and
(d) acidifying the aqueous liquid to separate the metallic silver.

4,799,955

SOFT COMPOSITE METAL POWDER AND METHOD TO PRODUCE SAME

Melvin L. McClellan, Beaver Falls, Pa., assignor to Elkem Metals Company, Pittsburgh, Pa.

Filed Oct. 6, 1987, Ser. No. 105,274
Int. Cl.[4] B22F *1/00*
U.S. Cl. 75—247 16 Claims

1. A method for making a metal composite powder from a base iron powder and an alloying component comprising the steps of:
(a) milling said base iron powder and said alloying component for a period of time sufficient to embed said alloying component in said base iron powder to produce an intermediate milled product;
(b) annealing said intermediate milled product to produce a metal composite powder having a compressibility similar to that of said base iron powder prior to milling; and
(c) recovering said metal composite powder.

4,799,956

INTERCALATD GRAPHITE GASKETS AND PRESSURE SEALS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 770,153, Aug. 27, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,179
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.[4] C22C *29/00*
U.S. Cl. 75—243 26 Claims

1. A sealing member comprising a compacted body formed from an intercalated graphite powder which is stable in air and at elevated temperature, said body being essentially free of separately added copper, nickel, silver, molybdenum or tungsten metal powder.

4,799,957

INTERCALATED GRAPHITE CONTAINING ELECTRICAL MOTOR BRUSHES AND OTHER CONTACTS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 770,155, Aug. 27, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,164
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.[4] C22C *29/00*
U.S. Cl. 75—243 20 Claims

1. An electrical contact comprising a compacted body formed from an intercalated graphite which is stable in air and at elevated temperature, said body being essentially free of separately added copper, nickel, silver, molybdenum or tungsten metal powder.

4,799,958

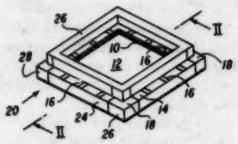
METALLIZING PASTE

Michael Morris, Sheffield, and John Vickers, Ulverston, both of England, assignors to Oxley Developments Company Limited, London, England

Filed Oct. 23, 1986, Ser. No. 924,302
Claims priority, application United Kingdom, Oct. 25, 1985, 8526397
Int. Cl.[4] H01B *1/06;* H01C *7/00;* C23C *30/00*
U.S. Cl. 106—1.12 5 Claims

1. A metallising paste comprising in combination
tugsten powder,
frit material consisting of equal proportions by weight of alumina, cerium fluoride, bismuth oxide and silica

20–50% by weight based on the total paste of an organic vehicle system;



the ratio to tungsten powder to frit in the paste being in an amount between 50 to 99 parts tungsten powder to 50 to 1 parts of frit material.

4,799,959

ANTICORROSION COATING COMPOSITION, PROCESS FOR APPLYING IT AND COATED THREADED COMPONENTS

Michel Fourez, 9, rue Jean-Jaures, Thiverny, 60160 Montataire; Michel Lonca, 303, route de Rantigny, Vaux sous Cambronne, 60290 Rantigny, and Patrick Pichant, 3 Alle des Charmes, 60300 Avilly St. Leonard, all of France

Continuation-in-part of Ser. No. 715,009, Mar. 22, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,818

Claims priority, application France, Mar. 26, 1984, 84 04661

Int. Cl.[4] C04B 9/02

U.S. Cl. 106—1.16 **15 Claims**

1. An aqueous anticorrosion coating composition for application to metal substrates, the composition, exclusive of lubricant, being provided by resin-free substituents including a phosphate-free hexavalent-chromium-providing component and particulate metal, while including organic liquid vehicle, which composition additionally contains lubricant comprising molybdenum disulfide, graphite, fluorinated polymer or their mixtures, and which lubricant is solid at the temperature of use of the substrate and is present in the coating composition in an amount sufficient to provide less than about 10 percent by volume of said lubricant in cured coating, and with the particulate metal of the composition being metal powder, metal flake or their mixtures, while being selected from the group consisting of zinc, manganese, aluminum, magnesium, their mixtures and their alloys.

4,799,960

INK COMPRISING WATER SOLUBLE TRIAZINE DYE FREE FROM CELLULOSE REACTIVE GROUPS

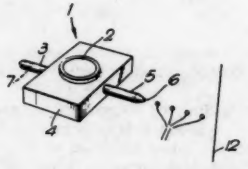
Anthony G. W. Baxter, Manchester; Stephen B. Bostock, Bury, and David Greenwood, Oldham, all of England, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 764,997, Aug. 12, 1985, Pat. No. 4,705,758. This application Nov. 10, 1986, Ser. No. 928,519

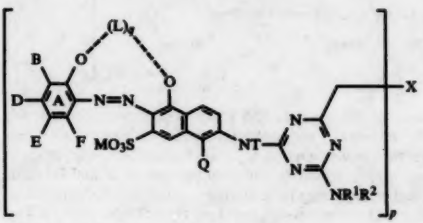
Claims priority, application United Kingdom, Aug. 24, 1984, 8421556; Mar. 19, 1985, 8507005; Mar. 21, 1985, 8507310

Int. Cl.[4] C09D 11/00, 11/02, 11/16, 11/18

U.S. Cl. 106—22 **17 Claims**



1. An ink comprising a liquid medium and a water soluble dye present in an amount ranging from 0.5 to 20% by weight, free from cellulose reactive groups, of the formula:



I

wherein

R^1 is $-(C_aH_{2a}O)_m(C_bH_{2b}O)_nH$,

R^2 is H or $-(C_aH_{2a}O)_m(C_bH_{2b}O)_nH$, or

R^1 and R^2 together with the nitrogen atom form a morpholine ring,

a and b are different and are from 2 to 8,

m is from 1 to 10,

n is from 0 to 9,

g is ½ or 1,

p is 1 or 2,

L is chromium, cobalt, copper or a mixture thereof,

M is H, ammonium, sodium, potassium or lithium,

Q is H or SO_3M,

T is H or C_{1-4}-alkyl,

D is a phenylazo or naphthylazo group each of which is unsubstituted or substituted by a group selected from sulphonate; carboxylate; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; mono- and di-C_{1-4}-alkylamino aminosulphonyl; mono- and di-C_{1-4}-alkylaminosulphonyl; aminocarbonyl; mono- or di-C_{1-4}-alkylaminocarbonyl; phenylamino; C_{1-4}-alkylcarbonylamino; hydroxy, nitro and halogen,

E is H, C_{1-4}-alkyl, halogen and aminosulphonyl,

B and F are H,

provided that: when p=1

X is selected from (i) NR^1R^2; (ii) NR^3R^4; (iii) OR^3; and (iv) a monoazo chromophore, derived from a benzene or naphthalene diazo component and a benzene, naphthalene or mono-heterocyclic coupling component and linked to the triazine group through a group $-NR^5-$ in which R^5 is selected from H, C_{1-4}-alkyl and phenyl; and

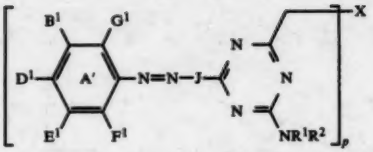
R^3 and R^4 are each independently selected from H, C_{1-4}-alkyl, phenyl, naphthyl and phenyl or naphthyl substituted by a group selected from C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkyl-carbonylamino, ureido, mono- and di-C_{1-4}-alkylamino, nitro, phenylamino, halogen, carboxylate, sulphonate, hydroxy and unsubstituted and mono- and di-alkylamino-sulphonyl and carbonyl;

and when p=2

X is $-NR^3-Z-NR^3-$; and

Z is selected from C_{1-6}-alkylene; phenylene; biphenylene; C_{1-4}-alkylenephen-4-ylene; C_{1-6}-alkylene, phenylene, biphenylene or C_{1-4}-alkylenephen-4-ylene interrupted by a group selected from CH_2, O, S, NR^3 and SO_2; and C_{1-6}-alkylene; phenylene, biphenylene; C_{1-4}-alkylenephen-4-ylene interrupted by a group selected from CH_2, O, S, NR^3 and SO_2 and substituted by a group selected from C_{1-4}alkyl, C_{1-4}-alkoxy, C_{1-4}alkyl-carbonylamino, ureido, mono- and di-C_{1-4}-alkylamino, nitro, phenylamino, halogen, carboxylate, sulphonate, hydroxy NH_2SO_2-, NH_2CO- and mono- and di-alkylaminosulphonyl and carbonyl.

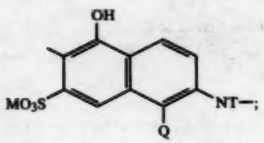
16. An ink comprising a mixture of the dye according to claim 1 and a dye of the formula:

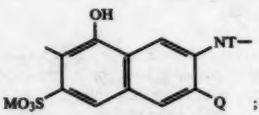


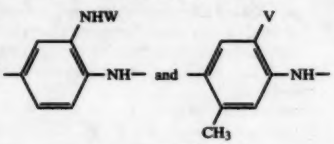
II

wherein R^1, R^2, p, Q, M and X are as defined in claim 1; B^1; D^1, E^1, F^1 and G^1, are selected from H; —SO_3M; $NHCOCH_3$; —COOM; mono- and di-C_{1-4}-alkylamino; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; hydroxy; nitro and halogen or B^1 and D^1 form a second benzene ring fused to ring A which is unsubstituted or substituted by a group selected from H; —SO_3M; $NHCOCH_3$; —COOM; mono- and di-C_{1-4}-alkylamino; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; hydroxy; nitro and halogen, provided that neither F^1 or G^1 is hydroxy; and

J is selected from:







wherein

T is H, alkyl or phenyl;

W is an acyl group selected from the group consisting of aminocarbonyl, aminosulphonyl, C_{1-4}-alkylcarbonyl, C_{1-4}-alkylsulphonyl, phenylcarbonyl and phenylsulphonyl; and

V is alkyl or alkoxy.

4,799,961

CEMENTUOUS FIBER IMPREGNATED CONSTRUCTION COMPOSITION AND PROCESS FOR FORMATION THEREOF

Walter R. Friberg, 831 N. Shore Dr., Bellingham, Wash. 98226

Filed Aug. 19, 1986, Ser. No. 897,860

Int. Cl.[4] C04B *14/38, 16/02*

U.S. Cl. 106—93 **4 Claims**

1. A method of preparing a moldable cementuous building composition containing wood fibers, comprising:

(a) forming a first slurry by boiling for at least two hours a first aqueous slurry comprising on a weight basis:

(1) about 0 to 20 percent fibrous material, at least part of which is processed wood fiber,

(2) about 20 to 50 percent calcium oxide,

(3) about 20 to 50 percent particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert,

(4) water to 100 percent to form a fluidic slurry:

(b) allowing the first slurry to stand for at lease three days after formation;

(c) forming a second dry concentrate by ball milling for at least thirty minutes a mixture comprising on a weight basis

(1) about 10 to 25 percent calcium oxide,

(2) about 5 to 20 percent calcium chloride,

(3) about 0 to 20 percent of calcium sulfate,

(4) about 10 to 20 percent of particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert,

(5) about 0 to 10 percent iron oxide, and

(6) about 0 to 10 percent Portland cement;

(d) mixing on a weight basis from about 10 to 50 percent of the first slurry and from about 3 to 10 percent of the second dry concentrate with from 40 to 80 percent of a third supplement mixture comprising on a weight basis:

(1) about from 5 to 40 percent Portland cement,

(2) about from 10 to 35 percent fiber, at least part of which is processed wood fiber, and

(3) about from 10 to 50 percent particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert.

4,799,962

WATER-SOLUBLE POLYMER DISPERSION

Syed M. Ahmed, Wilmington, Del., assignor to Aqualon Company, Wilmington, Del.

Filed Dec. 24, 1987, Ser. No. 137,841

Int. Cl.[4] C08N *1/08*

U.S. Cl. 106—188 **14 Claims**

1. An aqueous dispersions comprising a particulte water-soluble polyer selected from the group consisting of polyacrylamide and polyacrylamide derivatives, polyvinylpyrrolidone and polyvinylpyrrolidone derivates, guar gum and guar gum derivatives, and cellulosic polymers, a low molecular weight polyethylene glycol, water and high molecular weight polyethylene glycol, all in amounts which result in a dispersion which is stable as made.

4,799,963

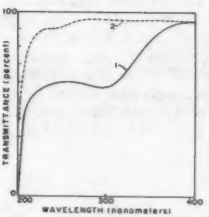
OPTICALLY TRANSPARENT UV-PROTECTIVE COATINGS

John D. Basil, Pittsburgh; Chia-Cheng Lin, Gibsonia, and Robert M. Hunia, Kittanning, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1986, Ser. No. 914,857

Int. Cl.[4] C09K *3/00*; C04B *14/00*

U.S. Cl. 106—287.13 **20 Claims**



1. An optically transparent coating composition which reduces transmission of ultraviolet radiation consisting essentially of:

a. a partially hydrolyzed alkoxide of the general formula $R_xM(OR')_{z-x}$ wherein R is an organic radical, M is selected from the group consisting of silicon, aluminum, titanium, zironium and mixtures thereof, R' is a low molecular weight alkyl radical, z is the valence of M and x is less than z and may be zero; and

b. colloidal cerium oxide.

4,799,964

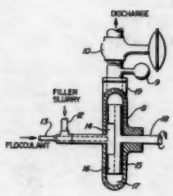
PREPARATION OF FILLER COMPOSITIONS FOR PAPER

Richard D. Harvey, and Robert E. Klem, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 760,277, Jul. 29, 1985, abandoned. This application Apr. 29, 1987, Ser. No. 45,221

Int. Cl.[4] C04B *14/00*

U.S. Cl. 106—436 7 Claims



1. A process of forming a flocculated filler for use in making paper or paperboard which consists in continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in papermaking without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device.

4,799,965

METHOD FOR DEMINERALIZING BEET SUGAR THIN JUICE

Age Bakker, Oosterhout; Genesius J. J. M. Schepers, Noordhoek, and Kees Koerts, Driebergen, all of Netherlands, assignors to Cooperatieve Vereniging Suiker Unie U.A., Netherlands

Filed Sep. 10, 1987, Ser. No. 94,866

Claims priority, application Netherlands, Sep. 12, 1986, 8602318

Int. Cl.[4] B01D *59/30;* C13D *3/14*

U.S. Cl. 127—46.2 3 Claims

1. Method for demineralizing beet sugar thin juice with a solids content of 10 to 40% by weight by first passing said juice through a solid bed of a weakly acidic cation exchanger in hydrogen form and then passing said juice through a solid bed of a weakly basic anion exchanger in hydroxyl form in the same temperature range, at the same rate and for the same contact time, characterized in that the juice is passed through said weakly acidic cation exchanger at 10° to 40° C. at a rate of 10 to 180 bed volumes per hour and a contact time of 20 to 360 sec and is then passed through said weakly basic anion exchanger.

4,799,966

PROCESS FOR CONVERTING ALPHA TO BETA-LACTOSE

Frederick W. Parrish, Metairie, La., and Samuel Serota, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 18, 1987, Ser. No. 63,358

Int. Cl.[4] C13F *1/00, 1/02;* C13K *5/00*

U.S. Cl. 127—63 5 Claims

1. A process for converting alpha-lactose to beta-lactose which comprise contacting said alpha lactose with an aliphatic alcohol at a temperature from about 120° C. to about 150° C. and a pressure from about 150 to 200 psi, the ratio of said alpha-lactose to said aliphatic alcohol being about 1:8.

4,799,967

METHOD FOR CLEANING APPARATUS FOR FABRICATING REACTIVE MULTIPLE-COMPONENT MIXTURES CONTAINING ISOCYANATE

Jörg Hausdorf, Mörlenbach; Joachim Kändler, Weinheim, and Volker Siekermann, Fürth, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Dec. 16, 1987, Ser. No. 133,310

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1987, 3713702

Int. Cl.[4] B08B *7/00;* C23D *17/00;* C09D *9/00;* C11D *7/50*

U.S. Cl. 134—38 8 Claims

1. A method of cleaning apparatus used in the manufacture of reactive multiple-component mixtures containing isocyanate comprising:

(a) flushing the apparatus with a cleaning agent comprising:

(i) 50 to 75 wt.-% of an ester of a short to medium chain length alkylsulfonic acid and a phenol or selected from the group consisting of diethyl phthalate or dioctyl phthalate, and

(ii) 25 to 50 wt.-% of a mineral oil fraction with a carbon number of 8 to 17 of an aliphatic, naphthenic or aromatic hydrocarbon, or mixtures thereof, the boiling range of the fraction being between 120° C. and 300° C.; and

(b) drying the apparatus by blowing air therethrough.

4,799,968

PHOTOVOLTAIC DEVICE

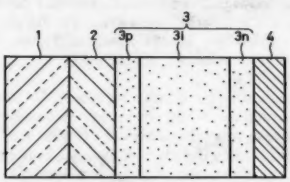
Kaneo Watanabe, Kyoto; Masayuki Iwamoto, Hyogo, and Koji Minami, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 99,347

Claims priority, application Japan, Sep. 26, 1986, 61-228796; Jun. 3, 1987, 62-139232

Int. Cl.[4] H01L *31/06*

U.S. Cl. 136—258 6 Claims



1. A photovoltaic device comprising a semiconductor layer of hydrogenated amorphous silicon for photoelectric conversion which includes a sub-layer on its light incident side, wherein the proportion of silicon atoms bonded to two hydrogen atoms to all the silicon atoms is not less than 8% in said sub-layer and not more than 1% in the remaining region.

4,799,969

METHOD FOR IMPROVING MAGNESIUM OXIDE STEEL COATINGS USING NON-AQUEOUS SOLVENTS

Michael W. Howe, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 45,490, May 4, 1987, Pat. No. 4,753,687. This application Apr. 1, 1988, Ser. No. 176,572

Int. Cl.[4] C23C *22/02*

U.S. Cl. 148—6.14 R 1 Claim

1. A slurry for use in the initial coating of silicon steel prior

to high temperature annealing which results is a decrease in tight magnesia consisting essentially of: (a) 0.1–20%, by weight, magnesium oxide; and (b) the balance a non-aqueous solvent in which said magnesium oxide is insoluble wherein the solvent is selected from the group consisting of ethylene glycol mono butyl ether, ethylene glycol, and isopropyl alcohol.

4,799,970

SURFACE TREATMENT METHOD FOR IMPROVING CORROSION RESISTANCE OF FERROUS SINTERED PARTS

Takashi Koiso, and Satoshi Fujii, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 857,147, Apr. 29, 1986, abandoned. This application Jul. 16, 1987, Ser. No. 75,199
Claims priority, application Japan, Apr. 30, 1985, 60-94240
Int. Cl.[4] C23C *22/36*
U.S. Cl. 148—6.2 **2 Claims**

1. A method for treating the surface of a ferrous sintered part having pores therein, consisting of the steps of treating said sintered part in a steam atmosphere heated to a temperature within the range of about 400° to 600° C. for several hours duration sufficient to form a dense film of iron oxide on the surface and in the interior of said sintered part, said dense iron oxide film sealing said pores in the surface layer of said sintered part; preparing a treating solution by dispersing in a liquid a mixture of at least one of zinc and aluminum, a hexavalent chromium providing substance, a reducing agent for said hexavalent chromium providing substance, and a surface active agent, applying said treating solution to the surface of said dense iron oxide film of said steam treated sintered part, heating said sintered part with the treating solution applied to said iron oxide film, at a temperature of 250° to 400° C. to remove volatile components from said treating solution to thereby form a coating film of particles of zinc and/or aluminum surrounded by polymers of trivalent chromium on said dense iron oxide film of said sintered parts, and impregnating at least said coating film by applying water glass or resin to said coating film for sealing said coating film.

4,799,971

TUBING FOR ENERGY ABSORBING STRUCTURES

Wallace R. McDougall, and James C. Seastone, both of Shelby, assignors to Copperweld Corporation, Pittsburgh, Pa.

Filed May 26, 1987, Ser. No. 53,946
Int. Cl.[4] C21D *8/06*
U.S. Cl. 148—12 B **6 Claims**

1. The method of manufacturing tubing for use in energy absorbing structures which comprises forming flat ferrous metal into a tube which has a greater diameter than that of the finished tube, welding the edges of the tube, heating the tube to a temperature above the A_{c3} temperature, quenching the heated tube, reheating the tube to a temperature below the A_{c1} temperature, allowing the heated tube to air cool, and cold rolling the tube in a sizing mill to final diameter.

4,799,972

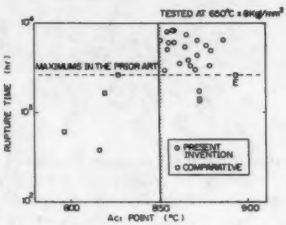
PROCESS FOR PRODUCING A HIGH STRENGTH HIGH-CR FERRITIC HEAT-RESISTANT STEEL

Fujimitsu Masuyama; Takashi Daikoku, both of Nagasaki; Hisao Haneda, Tokyo; Kunihiko Yoshikawa, Amagasaki; Hiroshi Teranishi, Amagasaki, and Atsuro Iseda, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 10, 1986, Ser. No. 917,502
Claims priority, application Japan, Oct. 14, 1985, 60-226993
Int. Cl.[4] C21D *6/00*
U.S. Cl. 148—14 **4 Claims**

1. A process for producing a high-strength high-Cr ferritic, heat-resistant steel exhibiting improved high-temperature, long-term creep strength, which consists essentially of, by weight %:

C: not more than 0.2%,
Si: not more than 1.0%,
Mn: 0.1–1.5%,
P: not more than 0.03%,
S: not more than 0.03%,
Ni: not more than 1.0%,
Cr: 5.0–15%,
Mo: 0.02–3%,
W: not more than 4.0%,
sol. Al: 0.005–0.04%,
N: not more than 0.07%,
at least one of V: 0.01–0.4% and Nb: 0.01–0.3%,



B: 0–0.02%,
at least one of Ca, Ti, Zr, Y, La, and Ce: 0–0.2%, and
the balance Fe and incidental impurities,
the A_{c1} point defined by Formula (1) below being 820° C. or higher;

$$A_{c1}(°C.)=765-500C-450N+30Si-25Mn+2\text{-}5Mo+15W+11Cr+50V+30Nb-30Ni+30 \text{ sol. } Al(\text{weight }\%) \quad (1)$$

which comprises subjecting the steel having the above composition to normalizing at a temperature of the A_{c3} point thereof or higher, and then to tempering at a temperature of 810° C. or higher but not higher than the A_{c1} point.

4,799,973

PROCESS FOR TREATING COPPER-NICKEL ALLOYS FOR USE IN BRAZED ASSEMBLIES AND PRODUCT

Deepak Mahulikar, West Haven, and Eugene Shapiro, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 2, 1984, Ser. No. 596,182
Int. Cl.[4] C22F *1/08*; B32B *15/20*
U.S. Cl. 148—435 **23 Claims**

1. A process for providing a copper-nickel alloy capable of maintaining its bend formability properties and a relatively fine grain structure when exposed to elevated temperatures, said process comprising:

providing a copper-nickel alloy having a first thickness, a desired temper and a desired grain size, said alloy containing from about 5% to about 45% nickel; and

subjecting said alloy to a final working step prior to said exposure to elevated temperatures, said working step comprising reducing said thickness from about 4% to about 30%.

4,799,974

METHOD OF FORMING A FINE GRAIN STRUCTURE ON THE SURFACE OF AN ALUMINUM ALLOY

Murray W. Mahoney, Camarillo, and Amit K. Ghosh, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 27, 1987, Ser. No. 54,558
Int. Cl.[4] C22F 1/04
U.S. Cl. 148—12.7 A 5 Claims

1. A method of forming a fine grain structure on the surface of an aluminum alloy, comprising the steps of:

providing an aluminum alloy having a precipitating constituent;

overaging the aluminum alloy;

plastically deforming the surface of the aluminum alloy without significantly deforming the center of the aluminum alloy; and

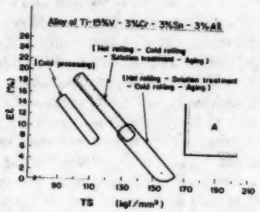
recrystallizing the surface of the aluminum alloy by heating it above its minimum recrystallization temperature.

4,799,975

METHOD FOR PRODUCING BETA TYPE TITANIUM ALLOY MATERIALS HAVING EXCELLENT STRENGTH AND ELONGATION

Chiaki Ouchi; Yohji Kohsaka; Hiroyoshi Suenaga, all of Tokyo; Hideo Sakuyama, and Hideo Takatori, both of Kanagawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Nippon Mining Co., Ltd., both of Tokyo, Japan

Filed Sep. 22, 1987, Ser. No. 99,537
Claims priority, application Japan, Oct. 7, 1986, 61-237140; Jan. 27, 1987, 62-15150
Int. Cl.[4] C22F 1/18; C22C 14/00
U.S. Cl. 148—12.7 B 20 Claims


Alloy of Ti-15%V - 3%Cr - 3%Sn - 3%Al
[Cold processing]
[Hot rolling → Cold rolling → Solution treatment → Aging]
[Hot rolling → Solution treatment → Cold rolling → Aging]
El (%)
A
TS (kg/mm²)

1. A method for producing β type titanium alloy materials having excellent strength and elongation, comprising a cold working at more than 30%, and intermediate solution treatment at a range of higher than β transus temperature, a final cold working between more than 3% and less than 30% and a final solution treatment and an aging treatment.

4,799,976

PROCESS FOR THE HEAT TREATMENT OF AL ALLOYS CONTAINING LI WITH A VIEW TO PRESERVING THEIR SURFACE HEALTH

Philippe Meyer, Voiron, France, assignor to Cegedur Societe de Transformation de l'Aluminum Pechiney, Paris, France

Filed Mar. 7, 1988, Ser. No. 165,008
Claims priority, application France, Mar. 9, 1987, 87 03581
Int. Cl.[4] C21D 1/74
U.S. Cl. 148—20.3 3 Claims

1. Process for the heat treatment of Al alloys containing Li with a view to preserving their surface condition, comprising heating above 300° C. in an atmosphere containing, in % by volume 5 to 95% CO_2, $5 \leqq air \leqq 95\%$ and the remainder H_2O.

4,799,977

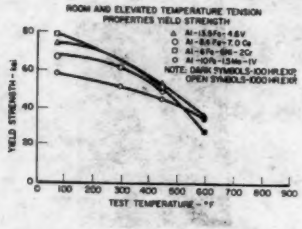
GRADED MULTIPHASE OXYCARBURIZED AND OXYCARBONITRIDED MATERIAL SYSTEMS

John J. Rausch, Lake Bluff, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 21, 1987, Ser. No. 98,081
Int. Cl.[4] C21D 1/56, 1/74
U.S. Cl. 148—317 16 Claims

1. A multiphase graded material system comprising: a refractory metal alloy base having a major metal selected from the group consisting of Group V-B metals (columbium, tantalum and vanadium), and having at least one alloy metal selected from the group consisting of Group IV-B metals (titanium, zirconium and hafnium), Group VI-B metals (molybdenum, tungsten and chromium) and mixtures thereof; said base having a surface containing non-metallic pick-ups in phases coexisting with said refractory metal alloy in concentration of at least 1 mg/cm^2 at said surface and decreasing inwardly from said surface, said non-metallic pick-ups being selected from the group consisting essentially of: oxygen and carbon; oxygen, carbon and nitrogen; oxygen, carbon and boron; and oxygen, carbon, nitrogen and boron.

4,799,978
ALUMINUM ALLOY
Sharon L. Langenbeck, Newhall, Calif., and Gregory J. Hildeman, Murraysville, Pa., assignors to Lockheed Corporation, Calabasas, Calif.
Continuation of Ser. No. 871,191, Jun. 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 714,765, Mar. 22, 1985. This application Oct. 2, 1987, Ser. No. 105,962
Int. Cl.[4] C22C *21/00*
U.S. Cl. 148—437 2 Claims


ROOM AND ELEVATED TEMPERATURE TENSION PROPERTIES YIELD STRENGTH
YIELD STRENGTH - ksi
TEST TEMPERATURE - °F
NOTE: DARK SYMBOLS-100 HR EXP.
OPEN SYMBOLS-1000 HR EXP.

1. A hot worked aluminum base alloy powder article consisting essentially of 81 to 91.9 percent aluminum, 4 to 8 percent iron, 4 to 8 percent nickel, and 0.1 to 3 percent chromium.

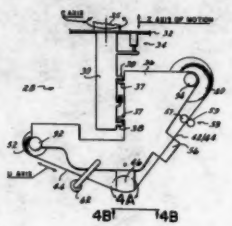
4,799,979
HEAT GENERATION
Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 757,606, Jul. 22, 1985, Ser. No. 707,656, Mar. 4, 1985, Ser. No. 685,910, Dec. 27, 1984, Ser. No. 643,782, Jul. 17, 1984, Ser. No. 584,538, Feb. 28, 1984, Ser. No. 559,334, Dec. 8, 1983, abandoned, Ser. No. 538,541, Oct. 3, 1983, Pat. No. 4,694,036, Ser. No. 507,174, Jun. 23, 1983, and Ser. No. 281,405, Jul. 8, 1981, Pat. No. 4,708,913, said Ser. No. 707,656, Ser. No. 685,910, Ser. No. 643,782, Ser. No. 584,538, and Ser. No. 559,334, each is a continuation-in-part of Ser. No. 554,441, Nov. 22, 1983, abandoned, said Ser. No. 685,910, Ser. No. 643,782, Ser. No. 584,538, Ser. No. 559,334, Ser. No. 538,541, and Ser. No. 554,441, each is a continuation-in-part of Ser. No. 531,444, Sep. 12, 1983, abandoned, said Ser. No. 507,174, is a continuation-in-part of Ser. No. 299,789, Sep. 4, 1981, abandoned. This application Feb. 19, 1986, Ser. No. 830,767
Int. Cl.[4] C06B *45/30*
U.S. Cl. 149—5 6 Claims

1. A heat-generating pyrotechnic article in the form of a carbon fiber web hot over about one millimeter thick, bent to provide portions that block the open radiation of heat from other portions sufficiently to increase the heat-generating time at least about 60% as compared to when the web is not bent.

4,799,980
MULTIFUNCTIONAL POLYALKYLENE OXIDE BINDERS
Russell Reed, Jr., 2026 Mono St., Ridgecrest, Calif. 93555
Filed Jan. 28, 1988, Ser. No. 149,283
Int. Cl.[4] C06B *45/10*
U.S. Cl. 149—19.4 12 Claims

1. In an energetic composition having a polyalkylene oxide binder and a nitrate ester plasticizer, the improvement comprising said binder being formulated from a polyalkylene oxide having a tri-star or a tetra-star configuration and having a molecular weight from about 12,000–27,000 daltons.

4,799,981
SPOOL SERVO CONTROL FOR TAPE WEB POSITIONING
Kirby L. Stone; R. W. Kneifel, II, and John P. Brockman, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Mar. 15, 1988, Ser. No. 168,361
Int. Cl.[4] G05B *19/10*
U.S. Cl. 156—64 28 Claims

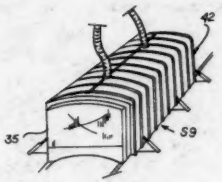


1. Apparatus for longitudinally positioning a tape web, comprising:
a frame;
means associated with said frame for rotatably supporting first and second spools adapted to contain opposite ends of a tape web;
an application member connected to said frame between the spools and over which the tape web is to be longitudinally positioned;
first drive means for applying a torque to the first spool;
second drive means for applying a torque to the said spool;
means for generating a position signal indicative of a desired longitudinal movement of the tape web over said application member;
means for generating a first dynamic torque signal in response to said position signal, said first dynamic signal being correlated to at least one of an inertial torque and a frictional torque of the first spool and said first drive means;
means for generating a second dynamic torque signal in response to said position signal, said second dynamic torque signal being correlated to at least one of (1) an inertial torque of the second spool and said second drive means, (2) a frictional torque of the second spool and said second drive means, and (3) a frictional force of the tape web being positioned over said application member;
means for generating a primary driving command signal correlated to at least (1) a following error difference between the desired longitudinal movement and an actual longitudinal movement of the tape web over said application member and (2) said first dynamic torque signal;
means for generating a secondary driving command signal correlated to at least said second dynamic torque signal;
means for coupling said primary driving command signal to said first drive means for applying torque to the first spool; and
means for coupling said secondary driving command signal to said second drive means for applying torque to the second spool whereby to longitudinally position the tape web over said application member.

4,799,982
METHOD OF MOLDING MONOLITHIC BUILDING STRUCTURE

Robert K. Vicino, San Diego, Calif., assignor to Charmasson & Holz, San Diego, Calif., a part interest

Continuation-in-part of Ser. No. 841,946, Mar. 20, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 129,466
Int. Cl.[4] B28B 5/04, 7/32; B32B 5/18; E04B 1/16
U.S. Cl. 156—71 19 Claims



1. An assembly-line method for manufacturing a monolithic building structure at a plurality of stations comprising the steps of:

inflating an inflatable plug formed by an envelope comprising a plurality of rigid, foldable, panel sections joined by means of hinges;

installing blockouts commensurate with desired door and window openings on an outer surface of said plug;

applying a layer of gypsum material to said outer surface of said plug;

curing said layer of gypsum material;

surrounding said plug with a matrix formed by a plurality of movable panels joined together in a parallelly-spaced-apart position from said layer of gypsum material to define a space between said outer surface of said plug and said matrix;

covering said gypsum layer with mats of loosely packed filiform reinforcing elements, said mats being dimensioned to fill said space unoccupied by said blockouts between said plug and said matrix;

injecting a hardenable cementitious slurry between said plug and matrix and said into said mats;

allowing said slurry to cure into a hard shell;

separating said matrix panels from said hardened slurry;

deflating said plug to separate said rigid sections from said layer of gypsum material; and

moving said hard shell to a separate station for further processing.

4,799,983
MULTILAYER CERAMIC SUBSTRATE AND PROCESS FOR FORMING THEREFOR

Kamalesh S. Desai, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,709
Int. Cl.[4] C04B 37/02, 33/02
U.S. Cl. 156—89 11 Claims

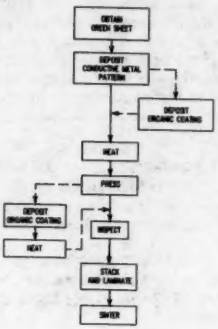
1. A process for forming a multilayer ceramic substrate comprising the steps of:

obtaining a plurality of ceramic sheets in the green state, then

depositing a conductive metal pattern on at least one of the green ceramic sheets, then

heating the at least one green ceramic sheet so as to soften it, then

pressing the conductive metal pattern into the at least one green ceramic sheet, then



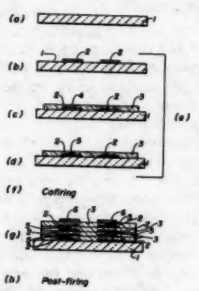
stacking and laminating the green ceramic sheets so as to form a substrate, and then

sintering the substrate.

4,799,984
METHOD FOR FABRICATING MULTILAYER CIRCUITS

Joseph R. Rellick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 18, 1987, Ser. No. 98,181
Int. Cl.[4] B32B 31/26
U.S. Cl. 156—89 21 Claims



1. A method for the fabrication of multilayer circuits comprising the sequential steps of

(a) providing a dimensionally stable electrically insulative substrate;

(b) applying to the substrate a patterned conductive layer;

(c) laminating to the patterned conductive layer and exposed areas of the substrate a layer of dielectric green tape having vias formed therein; the vias being in registration with the patterned conductive layer of step (b);

(d) filling the vias in the laminated green tape with a conductive metallization;

(e) in the event the multilayer circuit requires more than two layers having conductive patterns, repeating the sequence of steps (i) through (iii) until the desired number of circuit layers has been obtained:

(i) applying a patterned conductive layer to the green tape side of the unfired assemblage from step (d) or (iii) in registration with the vias in the green tape;

(ii) laminating to the patterned conductive layer and exposed dielectric areas a layer of dielectric green tape

having vias formed therein, the vias being in registration with the patterned conductive layer of step (i);

(iii) filling the vias in the laminated green tape with a conductive metallization;

(f) co-firing the multilayer assemblage from step (e);

(g) applying a patterned conductive layer to the ceramic tape side of the co-fired assemblage from step (f) in registration with the vias in the ceramic tape; and

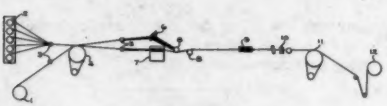
(h) firing the patterned conductive layer.

4,799,985

METHOD OF FORMING COMPOSITE FIBER BLENDS AND MOLDING SAME

Paul E. McMahon, Mountainside, and Tai-Shung Chung, Summit, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 589,930, Mar. 15, 1984, abandoned.
This application Apr. 28, 1986, Ser. No. 858,903
Int. Cl.[4] B65H *81/00*; B32B *31/20*
U.S. Cl. 156—166 **19 Claims**



1. A process for preparing a composite article which comprises:

(a) forming a continuous tow of continuous non-thermoplastic reinforcing fibers;

(b) forming a continuous tow of continuous thermoplastic polymer fibers having a melting point of at least about 50° C.;

(c) uniformly and continuously spreading the thermoplastic polymer fiber tow to a selected width;

(d) uniformly and continuously spreading the non-thermoplastic reinforcing fiber tow to a width that is essentially the same as the selected width for the thermoplastic polymer fiber tow;

(e) intimately, uniformly and continuously intermixing the spread non-thermoplastic reinforcing fiber tow and the spread thermoplastic polymer fiber tow in a relatively tension-free state by employing a gas intermixing means which directs a generally perpendicular gas flow onto the fibers and by bringing the tows into simultaneous contact with each other in substantially the same area such that there is provided a substantially uniform distribution of the thermoplastic fibers and the non-thermoplastic reinforcing fibers within an intimately intermixed tow;

(f) continuously withdrawing the intimately intermixed tow;

(g) applying the intimately intermixed tow to a mold; and

(h) heating the intermixed tow to a temperature above the melting point of the thermoplastic fibers.

4,799,986

METHOD OF FABRICATING POLYMER-COATED FABRIC OUTSIDE CORNER PIECES FOR SINGLE-PLY POLYMER-COATED FABRIC CORE ROOF MEMBRANES

Albert S. Jansi, Saginaw, Mich., assignor to Duro-Last Roofing, Inc., Saginaw, Mich.

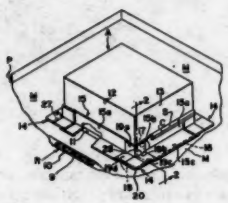
Filed Jul. 30, 1987, Ser. No. 79,586
Int. Cl.[4] B32B *31/04*
U.S. Cl. 156—196 **15 Claims**

1. A method of fabricating polymer-coated, fabric-core, corner pieces, particularly for the integrated enclosures provided on single-ply, thermoplastic polymer-coated, fabric core roof membranes to partly cover large vertical structures projecting vertically from the roof which have vertical walls forming a corner, the corner pieces having base sections formed of membrane material and extending at an angle one to another to lie flatwise relative to and sealably secured to, the membrane, said base sections each having relatively angularly disposed vertical wall sections integrally joined along a vertical fold and adapted to fit said corner; the steps of:

a. forming a first membrane segment with a part-way side split interjacent its ends;

b. forming a second membrane segment with a generally triangularly-shaped corner portion;

c. spreading and retaining the split edges of said first segment by placing them in abutting relation with opposing sides of an elongate male die part;



d. bowing said second segment to the general shape of a loop and placing it over said male die part such that said generally triangularly-shaped corner portion has its marginal edges lapping the spread split marginal edges of the first segment around said male die part;

e. placing an elongate female die part having flat welding edges to envelop said male die part such that said welding edges of the female die part engage said marginal edges of said second segment; and

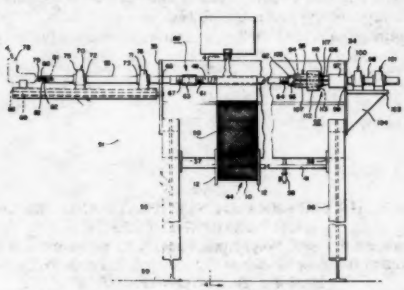
f. applying energy to heat-weld said marginal edges of the second segment to said marginal edges of said first segment abutting said male die part.

4,799,987

PIPE TURNING APPARATUS

Harry P. Sullins, Blytehwood, S.C., assignor to Richland Industries, Columbia, S.C.

Filed Apr. 10, 1987, Ser. No. 37,266
Int. Cl.[4] B65H *81/06*
U.S. Cl. 156—425 **20 Claims**



1. An apparatus for turning an elongated pipe comprising:

frame means;

first chuck means for rotatably mounting and driving one end of said pipe;

drive means for causing rotation of said first chuck means;

second chuck means positioned opposite to said first chuck means for slidably receiving the other end of said pipe to rotatably mount said pipe between said first and second chuck means, said second chuck means comprising a

plurality of resilient fingers defining a recess for slidably receiving a smooth end portion of said other pipe end, said fingers having an inner base portion and an outer gripping portion, said outer gripping portion of said fingers defining an internal transverse dimension of said recess which is less than a corresponding external transverse dimension of said smooth pipe end portion such that said outer gripping portion of said fingers are forced apart and thereby tensioned to resiliently grip said smooth pipe end portion upon sliding insertion of said other pipe end into said recess, said first and second chuck means being rotatably mounted on said frame means for rotation about the longitudinal axis of said rotatably mounted pipe; and,

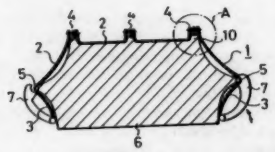
reciprocation means for axially reciprocating said first chuck means towards and away from said one pipe end in the direction of the longitudinal axis of said rotatably mounted pipe, reciprocation of said first chuck means towards said one pipe end positioning said first chuck means for engaging said one pipe end to rotate said pipe by said drive means and causing said other pipe end to be retained in said recess of said second chuck means so as to mount said pipe for said rotation, and reciprocation of said first chuck means away from said one pipe end positioning said first chuck means for release of said one pipe end from said first chuck means and for slidable release of said other pipe end from said recess of said second chuck means.

4,799,988

APPARATUS FOR MANUFACTURING AUTOMOTIVE SEATS

Makoto Shimada, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1986, Ser. No. 888,795
Int. Cl.[4] B32B *31/20, 31/04, 31/06*
U.S. Cl. 156—475 **3 Claims**



1. An apparatus for manufacturing an automotive seat comprising a shaping die having a shaping surface shaped to conform to a surface configuration of said seat, and a projected portion provided at a suitable position on said shaping surface of said shaping die for fixing a joint portions of a seat surface covering wherein said projected portion for fixation of said joint portions comprises a plate-like body which is provided in one side thereof with a leaf spring for gripping said joint portions of said seat surface coverings, and wherein said joint portions are fixed to said projected portion, and wherein further, said seat surface covering pressed against said shaping surface is connected to a cushion formed to conform to the configuration of said seat.

4,799,989

DOCUMENT MOISTENING DEVICE

Joseph H. Marzullo, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1987, Ser. No. 115,219
Int. Cl.[4] B31F *1/00*
U.S. Cl. 156—442.1 **7 Claims**

1. A device for applying moisture to a flexible document containing a water-activated adhesive, comprising:

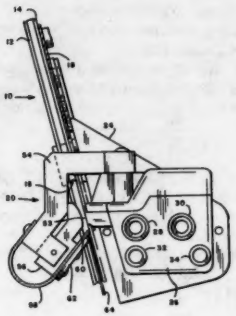
a reservoir for storing a source of water;

a supporting arm extending from said reservoir;

a pivotable hammer pivotably mounted to said supporting arm and extending toward said reservoir;

a moistening wick extending from said reservoir toward said pivotable hammer but spaced therefrom, the area between said moistening wick and said pivotable hammer defining a document path;

a flexible, one-way gate secured to a portion of said hammer for movement therewith, said gate having an end portion extending into said document path; and



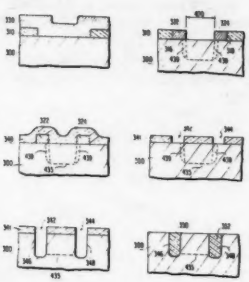
a gate deflector secured to said gate and said hammer portion for movement therewith, wherein movement of a document along the document path from the gate deflector toward the pivotable hammer causes said gate to flex out of the document path and movement of a document along said document path from the pivotable hammer toward said gate deflector causes said gate to engage said document and bend around said gate deflector to thereby cause said hammer to pivot and urge said document against said wick, whereby moisture is applied to portions of said document urged against said wick.

4,799,990

METHOD OF SELF-ALIGNING A TRENCH ISOLATION STRUCTURE TO AN IMPLANTED WELL REGION

Michael L. Kerbaugh, Burlington; Charles W. Koburger, III, Essex; Jerome B. Lasky, Essex Junction; Paul C. Parries, Essex Junction, and Francis R. White, Essex Junction, all of Vt., assignors to IBM Corporation, Armonk, N.Y.

Filed Apr. 30, 1987, Ser. No. 44,374
Int. Cl.[4] H01L *21/265, 21/308*
U.S. Cl. 156—636 **11 Claims**



1. A process for self-aligning an isolation structure to an implanted region, comprising the steps of:

providing on a surface of a semiconductor substrate, a mask-

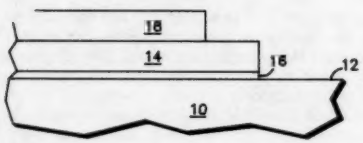
ing layer having at least one aperture formed therein, said aperture having sidewalls which are substantially perpendicular to the surface of said substrate;
implanting dopant ions into said substrate through said masking layer, so as to form a dopant region in said substrate;
defining sidewall spacers on said sidewalls of said aperture formed in said masking layer;
performing a sidewall image reversal process so that said sidewall spacers define trench apertures in a masking structure formed on said substrate;
etching isolation trenches into said substrate through said masking structure; and
wherein said step of implanting dopant ions is carried out immediately after said step of forming sidewall spacers on said sidewalls of said aperture is performed.

4,799,991

PROCESS FOR PREFERENTIALLY ETCHING POLYCRYSTALLINE SILICON

Jasper W. Dockrey, Pflugerville, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1987, Ser. No. 115,307
Int. Cl.[4] H01L *21/302*
U.S. Cl. 156—643 **14 Claims**



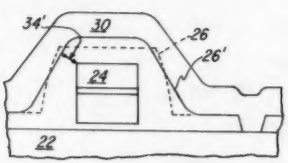
1. A process for etching polycrystalline silicon in preference to and in the presence of exposed monocrystalline silicon comprising the steps of:
providing a monocrystalline silicon substrate;
providing a patterned layer of polycrystalline silicon overlying said substrate and exposing a portion of said substrate;
anisotropically etching said patterned layer of polycrystalline silicon in a plasma comprising a noncarbonaceous compound of chlorine and oxygen as reactants;
controlling the composition of said reactants so that the surface of said monocrystalline silicon substrate is not substantially etched.

4,799,992

INTERLEVEL DIELECTRIC FABRICATION PROCESS

Kalipatnam V. Rao, Plano; Allan T. Mitchell, Garland, and James L. Paterson, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Del.

Filed Oct. 31, 1985, Ser. No. 793,593
Int. Cl.[4] B44C *1/22*; B23P *15/00*; C03C *15/00*
U.S. Cl. 156—643 **14 Claims**



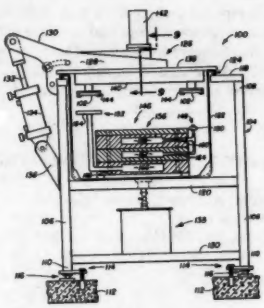
1. A process for fabricating integrated circuits, comprising the steps of:
providing a partially fabricated integrated circuit having a first patterned conductor layer thereupon;
depositing an interlevel dielectric overall;
anisotropicaly etching said interlevel dielectric to reduce its minimum thickness by at least 10 percent;
opening contact holes in said interlevel dielectric at a plurality of predetermined locations after said anisotropically etching step;
reflowing said interlevel dielectric, after said anisotropically etching step; and
forming a second patterned conductor layer in a predetermined pattern.

4,799,993

ROTARY DEVELOPER AND METHOD FOR ITS USE

Edward F. Hagan, Raleigh, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1988, Ser. No. 192,474
Int. Cl.[4] B44C *1/22*; B29C *37/00*
U.S. Cl. 156—644 **36 Claims**



27. A method for developing a portion of a layer comprising hardened and unhardened portions of an electronic part to form a via in the layer comprising the steps of:
loading the electronic part on a part holder rotatably mounted on a rotor;
spinning the rotor about an axis in a first direction;
orbiting the holder about the rotor axis;
rotating the holder about a holder axis;
spraying a liquid on the layer to wash out the unhardened portion to form a via;
drying the layer and the via; and
removing the part.

4,799,994

PROCESS FOR COOKING AND BLEACHING PULP

Pertti Rimpi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Apr. 28, 1986, Ser. No. 856,416
Claims priority, application Finland, Apr. 29, 1985, 851703
Int. Cl.[4] D21C *11/00*
U.S. Cl. 162—29 **10 Claims**

1. A process for cooking and bleaching pulp, whereby the spent liquors from the cooking and the bleaching are recovered and their chemicals are regenerated to be recycled as cooking and bleaching chemicals, comprising the steps of:
A. cooking fibrous pulp material with a cooking liquor to form a cooked pulp and spent cooking liquor and spent cooking liquor,
B. separating said cooked pulp from said spent cooking liquor,
C. preparing chlorine dioxide and a secondary product containing sodium, sulfur and chlorine, by reacting a portion of $NaClO_3$, a portion of H_2SO_4 and a first stream of SO_2 gas,

D. bleaching said pulp with said chlorine dioxide and a NaOH source to form a bleached pulp, and an alkaline spent bleach liquor,

E. separating said bleached pulp, from said alkaline spent bleach liquor, and neutralizing a first portion of said alkaline spent bleach liquor to form a neutralized spent bleach liquor,

F. washing said cooked pulp with said neutralized spent bleach liquor, said washing step occurring prior to said step B to form spent washing liquors,

G. separating said spent washing liquors from said cooked pulp,

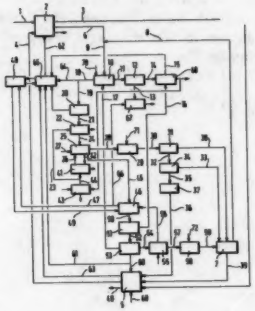
H. combining said secondary product with said spent washing liquors, burning the combined secondary product and liquors to form a melt and a stream of flue gases, containing solid material and separating said melt from said stream of flue gases,

I. dissolving said melt to form a concentrated, high sulphide, high chloride green liquor, and separating said green liquor into a first portion and a second portion,

J. causticizing said first portion of said green liquor to form said cooking liquor which is recycled to said step A for cooking fibrous pulp material,

K. clarifying said second portion of green liquor to form a clarified green liquor,

L. cooling said stream of flue gases and separating the cooled stream into a first cooled stream and a second cooled stream,



M. treating the clarified green liquor with said first cooled stream of flue gases to form a precarbonated green liquor,

N. treating said precarbonated green liquor with a $NaHCO_3$ containing solution to form a hydrogen sulphide-containing solution, a first sodium solution and a second sodium solution,

O. treating said first sodium solution with said second cooled stream of flue gases to form said $NaHCO_3$-containing solution, which is recycled to stpe N for treating said precarbonated green liquor,

P. burning said hydrogen sulphide-containing solution to form a SO_2 gas,

Q. separating said SO_2 into a first stream, which is passed to step C for preparing chlorine dioxide, and a second stream, which is converted to H_2SO_4 and exhaust gases, and said H_2SO_4 is passed to step C,

R. causticizing said second sodium solution with a source of CaO to form $CaCO_3$,

S. burning a first portion of said $CaCO_3$ to form CaO, which is recycled to step R as said CaO source,

T. evaporation crystallizing said causticized second sodium solution to form Na_2CO_2, solids Na_2SO_4 solids and a liquor of crystallization containing Na_2SO_4, and separating said Na_2CO_3 solids and Na_2SO_4 solids from said liquor of crystallization,

U. evaporation crystallizing a first portion of said liquor of crystallization of containing Na_2CO_3 to form NaCl crystals and a liquid containing NaOH,

V. separating said liquid containing NaOH into a first portion and a second portion, said first portion of said liquid containing NaOH is recycled to step D as said NaOH source for bleaching said pulp, and said second portion of said liquid containing NaOH is recycled to step J,

W. converting the NaCl crystals into $NaClO_3$, which is passed to step C as said portion of $NaClO_3$.

4,799,995

SCALE INHIBITION FORMULATIONS FOR KRAFT DIGESTERS

Druce K. Crump; Lance A. Cooper, both of Lake Jackson, and Thomas M. Hopkins, Kilgore, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1987, Ser. No. 79,307

Int. Cl.[4] C02F 5/14

U.S. Cl. 162—76 **5 Claims**

1. In the process for inhibiting scale in pulp mill kraft digesters by the addition of an aminopoly(alkylenephosphonic acid) to the pulp liquor the improvement which comprises adding the aminopoly(alkylene phosphonic acid) in combination with one or more nonionic surfactants.

4,799,996

METALLIZABLE SUBSTRATE COMPOSITES AND PRINTED CIRCUITS PRODUCED THEREFROM

Robert Cassat, Ternay, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 11,359, Feb. 2, 1987, Pat. No. 4,714,653, which is a continuation of Ser. No. 666,036, Oct. 29, 1984, abandoned. This application Jul. 27, 1987, Ser. No. 78,166

Claims priority, application France, Oct. 28, 1983, 83 17507

Int. Cl.[4] D21H 1/48

U.S. Cl. 162—136 **23 Claims**

1. A process for the production of a substrate composite, said composite including a central core layer comprising fibrous cellulosic material or flaked mica within a matrix of a thermosetting resin binder, said central core element having coextensively laminated to at least one of the face surfaces thereof, a lamina of a thermosetting resin comprising a particulate array of non-conductive metal oxide filler material distributed therethrough, at least a portion of said metal oxide being borohydride reduced to form unstable metal hydride intermediates into the depth of said lamina, said process comprising (i) preparing an aqueous papermaking slurry of a powder of said thermosetting resin and said fibrous cellulosic material or said flaked mica comprising said central core layer, (ii) papermaking a sheet member of same by removal of water therefrom, (iii) consolidating and drying said sheet member, (iv) coating at least one of the face surfaces of said sheet member with said thermosetting resin comprising non-conductive metal oxide filler material distributed therethrough, and (v) thence consolidating said coated sheet member.

4,799,997

SYSTEM FOR SENSING A DISCONTINUITY IN A PAPER WEB AND CONTAINING WEB PUNCTURING MEANS ACROSS THE WEB WIDTH

Robert H. Thompson, Hollins, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 6, 1987, Ser. No. 82,274

Int. Cl.[4] D21F 7/04

U.S. Cl. 162—255 **3 Claims**

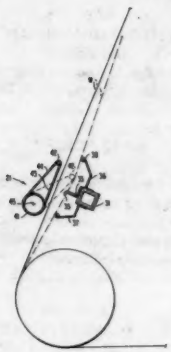
1. A web breakdown system in a papermachine having a normal production web route and web calendering means comprising:

(a) web continuity sensor means disposed adjacent said web route downstream of said calendering means for issuing a signal in the event of web discontinuity;

(b) web route displacement means disposed adjacent said

web route, on one side thereof, upstream of said calendering means;

(c) web puncturing means comprising a plurality of web puncturing elements disposed adjacent to and across substantially the entire width of said web route, said puncturing means being positioned on the other side of said web route from said displacement means and upstream of said calendering means;



(d) actuating means responsive to said web discontinuity signal for operating said web route displacement means and locally displacing the route of a moving web within said papermachine into penetrating engagement with said puncturing means; and,

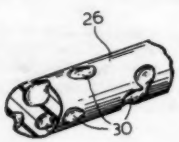
(e) said puncturing and deflection means being separated by distances sufficient to avoid injury to human body extremities present therebetween when said displacement means is operated by said actuating means.

4,799,998

PAPERMACHINE CLOTHING

William H. Dutt, Rensselaer, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,007
Int. Cl.[4] D21F *1/10*
U.S. Cl. 162—348 **1 Claim**



1. In papermachine clothing which comprises a plurality of synthetic, polymeric resin fibers and/or filaments in a cohesive fabric structure, the improvement which comprises; inclusion of porous fibers and/or filaments in the fabric structure.

4,799,999

DYNAMIC PRECIOUS METAL ASSAY METHOD

Boris Medvinsky, and Leonid Radomyshelsky, both of San Diego, Calif., assignors to Tri Electronics Company, Inc., San Diego, Calif.

Filed Mar. 31, 1987, Ser. No. 32,366
Int. Cl.[4] G01N *27/26*
U.S. Cl. 204—1 T **5 Claims**

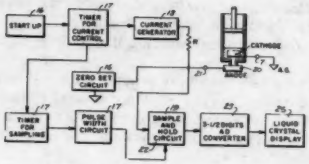
1. A dynamic precious metal assay method which comprises the steps of: Introducing an electrolyte onto a sample of precious metal,

creating a wet junction,

driving an electric current through said electrolyte,

anodizing said precious metal,

terminating said electric current,



monitoring a potential decay with respect to time of said precious metal sample at said wet junction,

comparing said potential decay with an empirical table of standards,

interpolating said potential decay by differentiating against said empirical table of standards, and

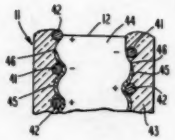
enunciating said interpolation.

4,800,000

LOW LEVEL MOISTURE MEASUREMENT SYSTEM AND METHOD

David A. Zatko, North Wales, Pa., and John F. Maguire, Riverton, N.J., assignors to Manufacturers Engineering Equipment Corp., Warrington, Pa.

Filed Jun. 3, 1987, Ser. No. 57,508
Int. Cl.[4] G01N *27/42*
U.S. Cl. 204—1 T **19 Claims**



1. An electrolytic cell for low level measurement of water in a gas, comprising the combination of:

a tubular conduit for a gas,

a gas inlet and a gas outlet in the conduit,

fittings on the inlet and outlet including channels therein for flow of the gas,

at least one pair of electrically isolated wires helically disposed in parallel on the interior wall of the conduit,

exterior leads connected to the wires,

said wires covering substantially the entire face of the interior wall exposed to the gas between the inlet and outlet, and

a water absorbent coating on the wires, said coating being electrically conductive only upon absorption of water in the gas, wherein portions of the wires adjacent the inlet and outlet, interior of the tubular conduit, are free of the absorbent coating.

2. A low level water measurement system comprising, in combination, the electrolytic cell of claim 1,

a power supply coupled to one of the exterior leads for providing electrical power to the cell,

a series resistor coupled to the other exterior lead for providing a current through the resistor equal to the current through the cell, and

voltage measurement means coupled to the resistor for mea-

suring the voltage across the resistor, thereby providing a measure of the current through the resistor.

3. A process for determining the amount of water in a gas, which comprises passing said gas through the cell of claim 1 for a time sufficient to absorb the water therein into the coating on the electrode wires of said cell, electrolyzing said water, and recording the amount of water as a function of the current required to effect said electrolysis.

4,800,001

METHOD AND APPARATUS FOR CONTINUOUSLY GALVANIZING FLAT WORKPIECES, AND ESPECIALLY PRINTED CIRCUIT BOARDS

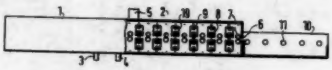
Rudi Ott, Sachsenheim, and Heribert Reith, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 30, 1987, Ser. No. 8,738

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1986, 3603856

Int. Cl.[4] C25D *7/00, 17/12, 17/28*

U.S. Cl. 204—15 **17 Claims**



1. Method of continuously galvanizing flat workpieces (12) each including electrically conductive material on at least a portion of the surface thereof,

comprising the steps of

feeding the flat workpieces in a nip formed between a pair of rotating rollers (7) having an electrically conductive surface, and being connected to a cathode terminal of an electrical source, and forming cathodic rollers;

then, downstream of said cathodic rollers (7), passing said workpieces between a pair of rotating rollers (8) connected to an anode terminal of the electrical source, and forming anodic rollers,

said anodic rollers having a surface (15) capable of accepting and carrying an electrolyte liquid, the surfaces of said anodic rollers being spaced slightly from the workpiece,

providing a spray hood (19) around said anodic rollers (8), said hood extending close to the surface of the workpiece (12) to prevent spraying of electrolyte onto the cathodic rollers, and spraying electrolyte within said hood (19) onto said electrolyte-accepting surface (15) of said anodic rollers, and

transferring electrolyte from said anodic rollers (8) to the workpieces (12) for electrochemical deposition of metal on the electrically conductive material of the workpiece in the gap between the surface of the workpiece and the surface of the anodic rollers while electrical current is being transferred to said electrically conductive material by continued engagement of said electrically conductive material with the cathodic rollers adjacent the anodic rollers.

4,800,002

METHOD OF MAKING A DIAMOND HEAT SINK

Josephus A. M. Peters, Vortum-Mullem, Netherlands, assignor to Drukker International B.V., 's Cuyk, Netherlands

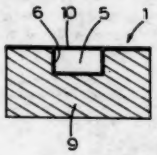
Filed Mar. 21, 1988, Ser. No. 170,540

Claims priority, application Netherlands, Mar. 23, 1987, 8700673

Int. Cl.[4] C25D *5/02, 5/54*

U.S. Cl. 204—15 **10 Claims**

1. Method of making a diamond heat sink, wherein at least one diamond is metalized, the metalized diamond is attached to a base plate and the exposed surfaces of the diamond and the base plate are coated with a metallic layer, whereafter the base plate is removed from the diamond to obtain the diamond heat sink composed of the diamond and the metallic layer, wherein a thin solder metal layer is applied in the contact surface between the diamond and the base plate and the diamond is



attached to the base plate by supplying heat through the diamond to the contact surface between the diamond and the base plate.

4,800,003

PRODUCTION OF MAGNESIUM METAL FROM MAGNESIUM CONTAINING MATERIALS

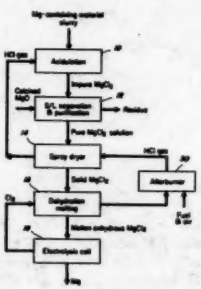
John G. Peacey, Lancaster, and G. Bryn Harris, Kirkland, both of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Sep. 29, 1987, Ser. No. 102,377

Claims priority, application Canada, Nov. 21, 1986, 523608

Int. Cl.[4] C15R *3/04*

U.S. Cl. 204—70 **4 Claims**



1. A process for the production of Mg metal from impure Mg-containing materials comprising the steps of:

(a) reacting a slurry of impure Mg-containing material with a hot HCl-containing gas stream to produce an impure $MgCl_2$ slurry;

(b) purifying said $MgCl_2$ slurry to form a substantially pure $MgCl_2$ solution ;

(c) drying said substantially pure $MgCl_2$ solution to produce a $MgCl_2$ powder containing up to about 5% each of MgO and H_2O;

(d) dehydration melting of said $MgCl_2$ powder to produce molten anhydrous $MgCl_2$;

(e) performing electrolysis of said molten anhydrous $MgCl_2$ to produce Mg metal and Cl_2; and

(f) recycling all the Cl_2 produced during electrolysis to said dehydration melting step for converting MgO and H_2O present in said $MgCl_2$ powder into $MgCl_2$ and HCl and for producing said hot HCl-containing gas stream.

4,800,004

CONDUCTOR ROLL PROFILE ADJUSTMENT

Kazuo Fujii, Chiba, Japan, assignor to Kawasaki Steel Corp., Hyogo, Japan

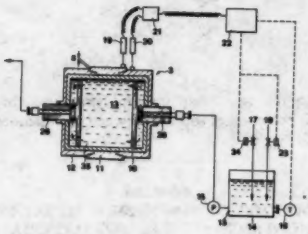
Filed Apr. 13, 1988, Ser. No. 181,326

Int. Cl.[4] C25D *7/06*

U.S. Cl. 204—28 **4 Claims**

1. A method for adjusting the profile of a conductor roll for

electroplating, the conductor roll having an axis and a circumferential outer surface and being provided on the circumferential outer surface with a conductor ring at an intermediate and a pair of rubber linings at axially opposed sides of the conductor ring, a step being formed between the outer surfaces of the conductor ring and the rubber lining, the method comprising



cooling the conductor roll with a coolant passing through the interior of the roll, and

controlling the temperature of the coolant in response to the information indicative of the step to thereby control the step to a predetermined value.

4,800,005

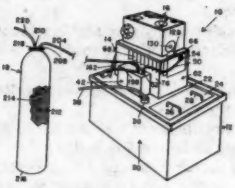
TREATMENT PLANT FOR RECOVERY OF METAL FROM HAZARDOUS WASTE

Gerson J. Rosenfield, 40 Edgelawn Ave., North Andover, Mass. 01845; Samuel Rosenfeld, deceased, late of Lexington,, Mass., and Rhoda Rosenfeld, executrix, 6 Wheeler Rd., Lexington, Mass. 02173

Filed Aug. 14, 1987, Ser. No. 85,366

Int. Cl.[4] C25C *1/20*; C02F *1/46*; C25D *17/00, 17/12*

U.S. Cl. 204—109 **35 Claims**



25. Process for the electrolytic recovery of silver from spent photo fix solutions in which the silver is dissolved comprising:

(a). providing spent photo fix solution to an electrolytic recovery operation at a predetermined fixed flow rate;

(b). subjecting a first predetermined increment of that spent solution to successive electrolytic recovery operations and then

(c). subjecting successive predetermined increments of the spent solution to the same successive electrolytic recovery operations.

4,800,006

ELECTROLYTIC FINISHING SYSTEM AND METHOD

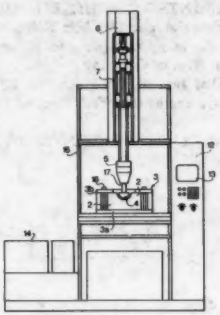
Youhei Kuwabara, Fukurol; Teruo Asaoka, Kakegawa; Masayoshi Moriya, Shizuoka; Yasuhiro Iwasaki, Mori, and Haruki Sugiyama, Hamamatsu, all of Japan, assignors to Shizuoka Seiki Co., Ltd., Shizuoka, Japan

Filed Oct. 22, 1987, Ser. No. 111,237

Claims priority, application Japan, Oct. 30, 1986, 61-257071; Feb. 9, 1987, 62-027616; Apr. 23, 1987, 62-100291

Int. Cl.[4] B23H *3/10, 11/00*

U.S. Cl. 204—129.43 **7 Claims**



6. A method for finishing a work having a three-dimensional surface comprising:

positioning an electrode to form a predetermined gap between the electrode and the surface of the work;

supplying electrolyte to an electrolyte tank so as to submerge the electrode and the work;

applying a pulse to the electrode;

injecting an electrolyte to the gap to expel the electrolyte in the gap after at least one pulse application;

discharging the electrolyte including residual products from the electrolyte tank;

cleaning the discharged electrolyte to produce clean electrolyte; and

repeating said method.

4,800,007

CORROSION PROTECTION FOR HEAT EXCHANGERS

Bertil Karlsson, Lund, and Leif Berthagen, Glumslöv, both of Sweden, assignors to Alfa-Laval Thermal AB, Lund, Sweden

PCT No. PCT/SE85/00341, § 371 Date May 8, 1986, § 102(e) Date May 8, 1986, PCT Pub. No. WO86/01837, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 11, 1985, Ser. No. 862,494

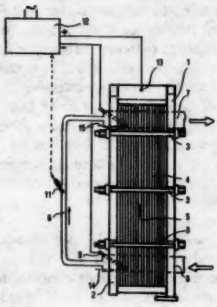
Claims priority, application Sweden, Sep. 19, 1984, 8404682

Int. Cl.[4] C23F *13/00*

U.S. Cl. 204—196 **10 Claims**

1. A heat exchanger comprising means forming at least one flow way for a first fluid and a plurality of flow passages coupled in parallel for a second fluid, said means including metallic first elements arranged for heat transfer between fluids passing through said flow way and said flow passages, respectively, second elements forming an inlet channel and an outlet channel in communication with the respective ends of said flow passages, means for supplying a corrosive liquid to said inlet channel, separate cathodes in the inlet and outlet channels, respectively, a direct current source having a negative terminal connectd to said cathodes and having a positive terminal connected to said metallic first elements, a reference electrode arranged to sense a value related to the potential of said metallic first elements relative to corrosive liquid supplied through said inlet channel, a control unit connected to said reference electrode and said direct current source and operable

to change the current output of the current source in response to a difference between a preset value and said sensed value to obtain and maintain said potential within the passive range of a relevant polarization curve, said reference electrode being



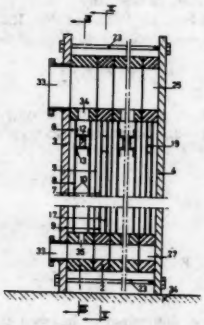
located in spaced relation to said inlet and outlet channels, and means forming a separate passageway coupled in parallel with said flow passages and arranged for through flow of corrosive liquid supplied to said inlet channel, said reference electrode being located in said separate passageway.

4,800,008

ELECTROLYSER OF THE FILTER-PRESS TYPE

Jean-Paul Detournay, Franiere, and Emile Cabaraux, Brussels, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Jul. 1, 1987, Ser. No. 68,842
Claims priority, application France, Jul. 9, 1986, 86 10143
Int. Cl.[4] C25B 9/00, 9/02
U.S. Cl. 204—253 11 Claims



1. Electrolyser of the filter press type comprising a stack of vertical frames defining electrolysis chambers, vertical electrodes in said chambers, rigid members at the ends of said stack and tension means for drawing said end members toward one another to compress said frames between them,

said frames being formed of elastically deformable material and freely surrounding respective electrodes to permit lateral expansion of said frames when compressed between said end members, and

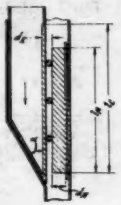
means locally interconnecting said electrodes with respective frame, only at spaced intervals distributed around the peripheries of said electrodes to position said electrodes with respect to said frames while permitting lateral expansion of said frames.

4,800,009

ELECTROCHEMICAL CELL WITH MOVING ELECTRODE

Aleksandar Despic, Vlajkoviceva 13, and Kosta Krsmanovic, Dr. Nika Miljanica 7, both of 11000 Beograd, Yugoslavia

Filed Aug. 17, 1987, Ser. No. 86,313
Claims priority, application Yugoslavia, Apr. 24, 1987, 749/87
Int. Cl.[4] C25D 17/10; C25B 9/00; C25C 7/02; H01M 4/00
U.S. Cl. 204—225 20 Claims



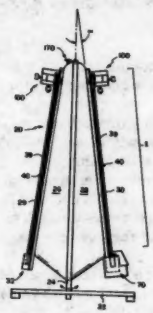
1. A plurality of electrochemical cells each having an anode, a support said anode, a cathode, and a support for said cathode, one of said anode and said cathode being movable with respect to the other of said anode and said cathode characterized in that said anode support has a partially beveled surface which slidingly support means provided on said cathode support of an adjacent cell to enable movement of said cathode support of said adjacent cell relative to said anode support and each of said cathodes carries spacers operative to maintain a predetermined spacing between said anode and said cathode of each of said cells.

4,800,010

LOCKABLE, ROTATING ELECTROPHORESIS DEVICE

Robert R. Hellman, Jr., Southbury, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1988, Ser. No. 187,117
Int. Cl.[4] G01N 27/26
U.S. Cl. 204—299 R 8 Claims



1. In an electrophoresis device for electrophoretically separating charged compounds, the device comprising a support for mounting at least one gel plate assembly, a pair of buffer tanks for each gel plate assembly, means for mounting said pair of tanks at opposite ends of said each gel plate assembly, and means for applying a current at said opposite ends of said each plate assembly;

the improvement wherein said device further includes a base on which said support is mounted, means for rotating said support about said base about a generally vertical axis, and

means for releasably locking said support in at least one position relative to said base.

4,800,011

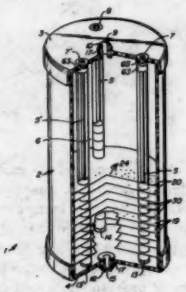
FLUID FILTER WITH IMPROVED ELECTRODE AND SPACER CONFIGURATION

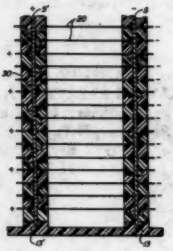
Woodrow A. Abbott, 2930 Sunnyfield Dr., Whitegate Estates, Merced, Calif. 95340, and Leo J. Durossette, 1100 N. Central, Modesto, Calif. 95351

Filed Jul. 22, 1987, Ser. No. 76,463

Int. Cl.[4] B03C 5/02, 3/34, 3/40

U.S. Cl. 204—302 **15 Claims**





1. A filter for removing particles from fluids comprising:

a housing defining a chamber and formed with an inlet and an outlet;

a plurality, including first and second sets, of plate-like electrodes disposed within said chamber and arranged in spaced parallel relationship;

a plurality of porous filter media disposed between said electrodes in said chamber so that fluid flowing from said inlet to said outlet passes through said porous filter media and through the regions between adjacent ones of said electrodes;

first and second conductive bus bars, each having a respective cross section, said bus bars extending generally perpendicular to said electrodes;

each of said first set of electrodes being formed with first and second apertures, said first aperture being sized to correspond to the cross section of said first bus bar, said second aperture being larger than the cross section of said second bus bar;

each of said second set of electrodes being formed with first and second apertures, said first aperture being sized to correspond to the cross section of said second bus bar, said second aperture being larger than the cross section of said first bus bar;

said electrodes being disposed with said first bus bar passing through the respective first apertures of said first set of electrodes and through the respective second apertures of said second set of electrodes; and

a plurality, including at least two types, of dielectric spacer elements associated with said first bus bar;

each of said spacer elements having a body portion formed with a bore sized to accommodate said first bus bar, said body portion having an axial extent corresponding to a separation distance between adjacent electrodes and having a transverse cross section larger than the second apertures of said second set of electrodes;

each of at least one of said types of said spacer elements further having a projecting portion formed with a bore sized to accommodate said frist bus bar, said projecting portion having a cross section commensurate with the second apertures of said second set of electrodes, thereby defining a shoulder between the body portion and the projecting portion;

each of at least another of said types of said spacer elements having its body portion formed with a cavity opening towards one end of the spacer element and acting to enlarge the bore of the spacer element, said cavity being sized to allow insertion of the projecting portion of another spacer element;

said spacer elements being axially aligned, with said first bus bar passing through the respective bores of said spacer elements so as to permit electrical contact between said first bus bar and said first set of electrodes, and with said projecting portions of said spacer elements passing through the respective second apertures of said second set of electrodes so as to prevent electrical contact between said first bus bar and said second set of electrodes.

4,800,012

ELECTROCHEMICAL PROCESS FOR THE REPLACEMENT OF HALOGEN ATOMS IN AN ORGANIC COMPOUND

Steffen Dapperheld, Kriftel; Rudolf Heumüller, Bad Soden am Taunus, and Manfred Wildt, Brombachtal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

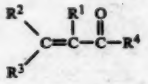
Filed Feb. 16, 1988, Ser. No. 155,767

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3704915

Int. Cl.[4] C25G 3/00

U.S. Cl. 204—73 R **9 Claims**

1. A process for the replacement of halogen atoms by hydrogen or deuterium atoms in an organic compound of the formula I



(I)

in which

R^1 is a hydrogen, deuterium or halogen atom or a methyl, deuteromethyl, nitrile, halogenomethyl or deuterohalogenomethyl group,

R^2 and R^3 independently of one another are hydrogen, deuterium or halogen atoms, and

R^4 is halogen, —OH, —OD, —OMe in which Me=an alkali metal ion, alkaline earth metal ion or NH_4^+ ion, C_1–C_{12}-alkoxy, nitrile or $—NR^5R^6$ in which R^5 and R^6 are identical or different and denote —H, —D, C_1–C_{12}-alkyl or phenyl,

at least one of the radicals R^1, R^2 or R^3 being a halogen atom, by means of electrochemical reduction, which comprises subjecting the compound of the formula I to electrolysis, in an undivided cell or a divided cell, in an electrolysis liquid composed of:

0 to 100% by weight of water or deuterium oxide,

100 to 0% by weight of an auxiliary solvent and

0 to 10% by weight of a salt of a metal having a hydrogen overvoltage of at least 0.25 volts relative to a current density of 300 mA/cm^2) and/or having dehalogenating properties,

relative in each case to the total amount of electrolyte in the undivided cell or of the catholyte in the divided cell, at a temperature from −10° C. up to the boiling point of the electrolysis liquid and at a current density of 1 to 500 mA/cm^2, the cathode being composed of lead, cadmium, zinc, copper, tin, zirconium or carbon.

4,800,013

REFRIGERATOR OIL COMPOSITION

Ryozo Yamane, Funabashi; Takashi Kurihara, Ichihara; Hiroshi Kaise, Ouizumi; Takeo Komatsubara, Ashikaga, and Takashi Sunaga, Oura, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed May 13, 1987, Ser. No. 50,501

Claims priority, application Japan, May 26, 1986, 61-119090

Int. Cl.^{4} C10G *71/00*

U.S. Cl. 208—19 **4 Claims**

1. A refrigerator oil composition comprising 70 to 98 wt % of a paraffin base oil having a pour point of not more than −35° C., a sulfur content of not more than 50 ppm and a kinematic viscosity at 40° C. of 5 to 500 cSt, and 30 to 2 wt % of a naphthene base oil having a pour point of not more than −35° C., a sulfur content of 0.05 to 1 wt % and a kinematic viscosity at 40° C. of 5 to 500 cSt, wherein the sulfur content of the composition is 0.01 to 0.10 wt %.

4,800,014

CATALYTIC CRACKING PROCESS

George E. Hays; Richard H. Nielsen; Chester O. Bowen, and Floyd H. Holland, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

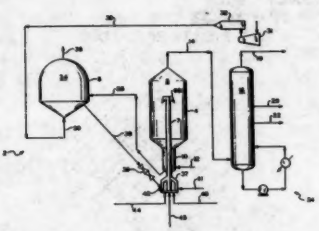
Division of Ser. No. 557,552, Dec. 2, 1983, Pat. No. 4,562,046.

This application Oct. 23, 1985, Ser. No. 790,580

The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.

Int. Cl.^{4} C10G *11/18*

U.S. Cl. 208—157 **15 Claims**



1. A method for mixing a fluidized particulate catalyst and a liquid oil feedstock comprising:

introducing a stream of the liquid oil feedstock in admixture with an atomizing fluid generally axially into the mouth of a riser reactor from an atomization chamber generally in axial alignment with the riser; and

introducing the fluidized particulate catalyst into the mouth of the riser from substantially the entire circumference of the mouth of the riser, wherein the fluidized particulate catalyst is introduced into the mouth of the riser from a catalyst lift chamber annularly positioned around the atomization chamber and physically separated from the atomization chamber, and wherein the fluidized particulate catalyst flows into the oil feedstock with a substantially radially inward velocity component from the periphery of the stream of oil feedstock.

4,800,015

UTILIZATION OF LOW RANK COAL AND PEAT

John J. Simmons, P.O. Box 1971, Bismarck, N. Dak. 58502

Division of Ser. No. 848,166, Apr. 3, 1986, Pat. No. 4,705,533.

This application Jun. 17, 1987, Ser. No. 63,124

Int. Cl.^{4} C10M *175/00*

U.S. Cl. 208—180 **1 Claim**

1. A method for utilizing waste oil to produce an enriched fuel and re-refined oil comprising:

(a) obtaining a previously used oil;

(b) immersing a low rank coal which has been previously crushed to a mean particle size of between about ¼ and 1¼ inches in diameter in said oil;

(c) heating the oil coated mixture to a temperature of between about 300 to 400 degree F. (149–227 degrees C.) to dry said coal;

(d) screening and/or centrifuging the oil coated coal to allow excess oil to drain from said coal;

(e) heating the oil coated coat between about 350–500 degrees F. (177–260 degrees C.) to further reduce the oil content of the oil coated coal which is now an enriched fuel; and

(f) condensing the resulting water and oil vapors and separating the condensed products in a water-oil separator in order to obtain a rerefined condensed oil.

4,800,016

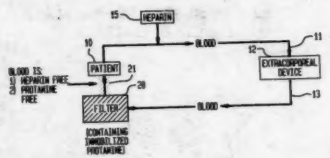
EXTRACORPOREAL BLOOD DE-HEPARINIZATION SYSTEM

Victor C. Yang, Ann Arbor, Mich., assignor to The University of Michigan, Ann Arbor, Mich.

Filed Nov. 24, 1986, Ser. No. 934,012

Int. Cl.^{4} B01D *36/02*

U.S. Cl. 210—206 **7 Claims**



1. A system for extracorporeal treatment of blood of a living in an extracorporeal device having an inlet and an outlet, the system comprising;

means for adding heparin to an extracorporeal flow of the blood prior to the blood entering the inlet of the extracorporeal device; and

filter means formed of protamine for binding said heparin, said protamine being immobilized in a biocompatible polymer support material, said filter means being coupled to the outlet of the extracorporeal device prior to returning the blood to a living being, whereby the returned blood is substantially free of said heparin.

4,800,017

FLOTATION MECHANISM

Prem Krishnaswamy, Chagrin Falls, and Mark E. Hoyack, Maple Hts., both of Ohio, assignors to Dorr-Oliver Incorporated, Stamford, Conn.

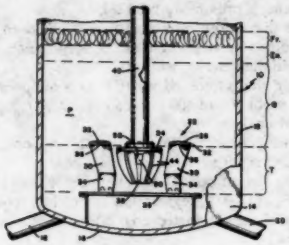
Filed Apr. 16, 1987, Ser. No. 39,051

Int. Cl.^{4} C02F *1/24*; B01F *3/04*

U.S. Cl. 210—219 **5 Claims**

1. An improved flotation mechanism suitable for flotation separation of materials from ore comprising an upstanding liquid tight receiving tank for receiving and processing a three phase slurry including intimately mixed finely ground solid liquid and air, a pump located within the cell defined by the

receiving tank and located in the lower region of the cell, the pump including rotor and stator members for creating a turbulent flow of the slurry for intimately mixed ground solids and for aerating the mixture, and means for directing the turbulent flow within the cell, said directing means comprising deflector vanes joining said stator members and having a predominantly horizontal orientation with a downwardly directed exit angle



for receiving the flow of slurry from the rotor and redirecting that flow to a generally outward and downward direction so that turbulent flow within the cell is confined to the lower region of the cell while formation of an upwardly extending uniformly aerated quiescent zone above the turbulent zone is promoted and an enrichment zone and a froth zone for efficient flotation of mineral particles by attachment to carrier air bubbles for recovery at the froth zone are formed.

4,800,018

PORTABLE WATER PURIFICATION SYSTEM

Ronald T. Moser, c/o Northwestern Resources, Inc., P.O. Box 898, Anderson, Calif. 96007

Filed Mar. 30, 1987, Ser. No. 31,857
Int. Cl.[4] B01D *27/02*
U.S. Cl. 210—266 **5 Claims**

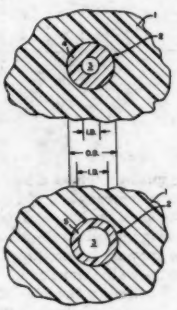
1. A water purification system comprising:
(a) a container with a wall having a tubular configuration; a base member covering one end of said container sealing said wall to form a water retaining structure;
(b) said wall being thickened adjacent said base member to provide a substantially centered support ledge inside the container;
(c) a removable disposable filter cartridge supported by said support ledge; the end of said container oppositely to said base being opened;
(d) said opened end of said container having a wall edge thereof fitted with a carrying rim; said carrying rim comprising
(e) a removable lid thereon; said container arranged for vertical use with said base downwardly and said carrying rim and removable lid upwardly;
(f) external support members affixed to said base for resting the container structure thereon;
(g) a crosswise handle diametrically disposed in a raised circular abuttment on said removable lid for twist attachment and detachment thereof from said carrying rim by cooperative threading therewith;
(h) said crosswise handle being apertured on sides by air vents cooperatively aligned with
(i) an internally positioned air venting straw;
(j) said container being partitioned in parallel alignment to said base and said removable lid substantially centrally by a removable and disposable filter cartridge;
(k) said centrally fitted disposable filter cartridge containing filtering materials retained therein by a flow-regulating apertured top cover, side walls of said dispoable cartridge, and a flow-regulating apertured bottom;
(l) said filtering materials comprising a filter fabric upper covering, a purifying medium core, and a filter fabric lower covering encased in said disposable filter cartridge;
(m) said disposable filter cartridge dividing said container into an upper unfiltered water receiving compartment and a lower filtered water storage compartment, whereby unfiltered water induced into said upper compartment passes through said disposable filter cartridge for purification and disposition into said lower compartment;
(n) a manual spigot installed adjacent said base in the container side wall piped into said lower compartment for removal of said purified water therefrom;
said air venting straw centrally aligned through said filter cartridge housing and extending through said upper unfiltered water receiving compartment to said apertures in said crosswise lid handle;
whereby said air venting straw arrangement allows air passage through said removable lid via said crosswise lid handle apertures into said filtered water storage compartment for air displacement therein and permits water to gravitate freely through the disposable filter cartridge into said filtered water storage compartment with said spigot opened or closed and allows free-flow of water from the filtered water storage compartment when purified water is retrieved by opening said spigot.

4,800,019

TUBESHEET FOR SEMIPERMEABLE MEMBRANE DEVICES

Benjamin Bikson, Brookline, and Salvatore Giglia, Norwood, both of Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 22, 1988, Ser. No. 184,799
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—321.8 **17 Claims**



1. A fluid separation device comprising.
a bundle of selectively permeable hollow fibers;
a resinous potting agent forming a tubesheet for the end portions of said permeable hollow fibers;
said permeable hollow fibers having the ends of the inner bores thereof open; wherein the major portion of the bores of said permeable hollow fibers along a portion of their

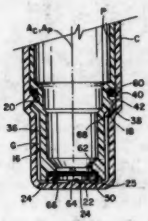
length embedded in said tubesheet has a larger inside bore diameter than the inside bore diameter of the section of said permeable hollow fibers not embedded in said tubesheet.

4,800,020

PISTON FILTERING DEVICE

Peter G. Savas, Concord, Mass.; Virginia S. Kiger, Old Bridge, N.J., and Ronald R. Boudreau, Fitchburg, Mass., assignors to Xydex Corporation, Bedford, Mass.

Filed May 21, 1987, Ser. No. 52,780
Int. Cl.[4] B01D *33/00*
U.S. Cl. 210—359 **26 Claims**



1. A filtering device comprising:
a hollow cylinder, open at one end and closed at the other,
an interior length of the cylinder contiguous with the closed end having a cylindrical cross section of reduced internal diameter,
a hollow piston, open at one end and having an aperture at the other,
a length of the piston contiguous with the end with the aperture having a cylindrical cross section of reduced external diameter,
the reduced external diameter of the piston being smaller than the reduced internal diameter of the cylinder to create a cylindrical gap therebetween when the piston is inserted into the cylinder,
filter material located across the aperture of the piston, and
the piston being slidable in the cylinder with the end with the aperture movable toward the closed end of the cylinder and with the reduced diameter portion of the piston movable within the reduced diameter portion of the cylinder to reduce the volume of space between the piston and the cylinder at the closed end of the cylinder.

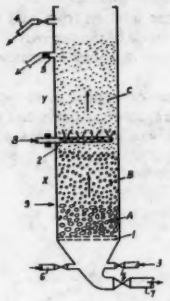
4,800,021

PROCESS FOR BIOLOGICALLY PURIFYING SEWAGE ON A BED OF GRANULAR MATERIAL

Gilbert Desbos, Maisons-Laffitte, France, assignor to OTV (Omnium de Traitements et de Valorisation), Courbevoie, France

Filed Sep. 25, 1987, Ser. No. 100,972
Claims priority, application France, Oct. 1, 1986, 86 13675
Int. Cl.[4] C02F *3/30*
U.S. Cl. 210—605 **5 Claims**

1. In a process for biologically purifying sewage with a biomass in a fixed multilayer bed of granular materials with at least partial aeration of the biomass and where the sewage to be treated flows upwardly in said bed, the improvement comprising using a single filtration reactor including a lower anaerobic zone and an upper aerobic zone, said zones being materially separated by an injection of oxygenated gas, said filtration reactor including, in an upward direction: a first layer having a grain size of between about 20 mm and about 60 mm over a height of at least 15 cm; a second layer having a grain size of between 6 mm and about 10 mm over a height of at least 40 cm; and an upper layer having a grain size of from about 21 mm to about 4 mm over a height of at least 50 cm; said injection of



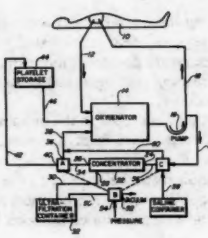
oxygenated gas being made in the lower part of the said upper layer.

4,800,022

PLATELET COLLECTION SYSTEM

Ronald J. Leonard, Harvard, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 711,145, Mar. 13, 1985, abandoned.
This application Nov. 4, 1986, Ser. No. 926,865
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—636 **22 Claims**



10. A method of collecting platelets from whole blood from a patient comprising:
obtaining said whole blood from said patient;
selectively transporting said whole blood through a passageway defined by at least a first porous membrane;
selectively removing substantially only water from a boundary layer formed adjacent said porous membrane to concentrate said platelets; and
flushing said concentrated platelets from said boundary layer.

4,800,023

METHOD OF ASEPTIC TREATMENT OF WATER AND A STORAGE CONTAINER TO BE USED AT SUCH TREATMENT

Nils Arthun, Partille, and Peter Löfgren, Hovås, both of Sweden, assignors to Steridose Systems, Askim, Sweden

Filed Feb. 2, 1987, Ser. No. 9,739
Int. Cl.[4] B01D *13/00, 21/00*
U.S. Cl. 210—644 **9 Claims**

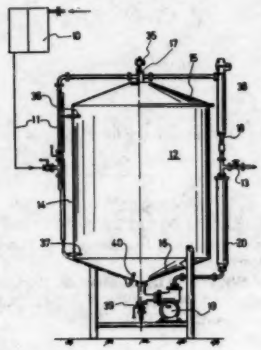
1. A method, comprising providing effective short term aseptic storage and treatment of water at a temperature as low as ambient, where produced water is supplied to a storage container and water is recirculated by means of a pump through a loop filter, including the steps of:

recirculating water from the bottom of the container up to the top part thereof,

mixing a fresh supply of water and recirculated water in a mixing and deflector member at the top part, and

spreading the water mixture from said member in a thin layer along the inside of the top part of the container and the internal side walls above a temporary water level in the container.

2. A storage container comprising: an apparatus for providing effective short term aseptic storage and treatment of water at a temperature as low as ambient, provided with an inlet and an outlet, including,



a cylindrical casing having a conical top and bottom parts connected thereto, wherein at least said top conical part lacks internal moisture accumulation projections,

a mixing and spreading unit arranged centrally at the top part of the container,

a connection conduit connected to the unit and arranged for supplying produced water from the outside of the container,

a circulation conduit from the bottom of the container to a pump and a loop filter in said circulation conduit, and

a discharge conduit downstream of the loop filter.

4,800,024

REMOVAL OF HEAVY METALS AND HEAVY METAL RADIOACTIVE ISOTOPES FROM LIQUIDS

Geraldine S. Elfline, Morrison, Ill., assignor to Iso-Clear Systems Corporation, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 849,152, Apr. 7, 1986. This application Aug. 4, 1986, Ser. No. 892,960

The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.

Int. Cl.[4] G21F *9/10*

U.S. Cl. 210—665 **41 Claims**

1. A method of treating a heavy metal-bearing liquid to remove a substantial portion of the heavy metals therefrom without substantial sludge formation comprising:

contacting said liquid with a water-insoluble carboxylated cellulose and a water-insoluble heavy metal interactant in an amount sufficient to cause precipitation of a substantial portion of the heavy metals in the liquid.

4,800,025

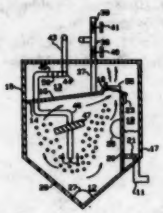
APPARATUS AND PROCESS FOR THE GAS FLOTATION PURIFICATION OF OIL-CONTAMINATED WATER

John A. Bibaeff, Lafayette, La., assignor to Pony Industries, Inc., New York, N.Y.

Filed Aug. 20, 1986, Ser. No. 898,293

Int. Cl.[4] C02F *1/24*

U.S. Cl. 210—703 **29 Claims**



1. A dispersed gas flotation apparatus useful for separating insoluble impurities from a liquid comprising:

(a) an elongate closed flotation vessel having an inlet end, an outlet end, a front sidewall, and a rear sidewall and defining a lower liquid flow zone and an upper gas collection zone, the direction from said inlet end to said outlet end defining a longitudinal direction,

(b) means for introducing a liquid contaminated with insoluble impurities into the inlet end of the vessel,

(c) means for removing at least partially decontaminated liquid from the outlet end of the vessel,

(d) at least one vertical baffle means disposed in said liquid flow zone substantially normal to said longitudinal direction for dividing said liquid flow zone into a plurality of flotation cells, said baffle means being substantially impervious to flow of said liquid except for a cutout adjacent one of said front and rear sidewalls for affording communication between adjacent flotation cells, thereby permitting said liquid to flow between said flotation cells,

(e) vertical screen means disposed in at least one flotation cell in a substantially parallel plane relative to said vertical baffle means, said screen means being adapted to aid in the separation of said insoluble impurities from said liquid,

(f) gas introduction means for introducing gas bubbles into an interior of at least one flotation cell, said gas bubbles rising upwardly through said liquid and contacting the insoluble impurities,

(g) contaminant collection means disposed longitudinally and horizontally in said vessel above said vertical baffle means and said screen means, and

(h) means communicating with said contaminant collection means for removing contaminants from said vessel;

wherein said cutout is positioned in said baffle means at a location minimizing a downward flow of liquid opposite said upward direction of said rising gas bubbles.

4,800,026

CURABLE AMINE FUNCTIONAL SILICONE FOR FABRIC WRINKLE REDUCTION

Timothy W. Coffindaffer, Loveland, and Louis F. Wong, Mason, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 64,954, Jun. 22, 1987, abandoned. This application Dec. 22, 1987, Ser. No. 136,586

Int. Cl.[4] D06M *00/00*; C08G *37/26*

U.S. Cl. 252—8.8 **23 Claims**

1. A liquid fabric care composition comprising: (1) a suitable curable amine functional silicone agent for wrinkle reduction, (2) an effective amount of a fabric softener, and (3) a suitable carrier to deposit an effective amount of said curable amine functional silicone on said fabric, and

wherein said curable amine functional silicone curves to form silicone-oxygen-silicone linkages; and wherein said fabric softener is selected from the group consisting of:

i. a quaternary ammonium compounds;

ii. a fatty amine fabric softening compounds;

ii. a fatty amide compounds; and

iv. mixtures thereof.

4,800,027

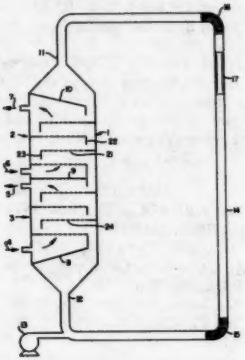
PROCESS FOR CONTINUOUS APPLICATION OF SOLID LUBRICANT TO MOVING BED PARTICLES

William E. BeVier, Kenmore; Charles F. Falls, deceased, late of Tonawanda, both of N.Y., and by Virginia N. Falls, executor, Seminole, Fla., assignors to UOP, DesPlains, Ill.

Filed Jan. 27, 1987, Ser. No. 7,089

Int. Cl.[4] C10M *125/02, 125/00*

U.S. Cl. 252—18 **10 Claims**



1. A process for applying solid lubricant to moving bed particles comprising recirculating moving bed particles through a moving bed apparatus having an enclosure, enclosure outlet and inlet, and conduit means between the inlet and outlet so as to place the inlet and outlet in flow communication, and contacting recirculating moving bed particles with solid lubricant comprising at least some of the internal surface of said conduit means, thereby applying solid lubricant to the surface of said recirculating moving bed particles.

4,800,028

POLYMERS AND LUBRICANT ADDITIVES OF ALKYLENE DITHIOTHIADIAZOLES AND ALKYLENE CYANODITHIOIMIDOCARBONATES

Sameeh S. Toukan, Schuylkill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 737,121, May 23, 1985, Pat. No. 4,678,592. This application Jul. 6, 1987, Ser. No. 69,910

The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.

Int. Cl.[4] C10M *103/00, 149/00*

U.S. Cl. 252—25 **8 Claims**

1. A polymeric composition having the formula

$$[Y]_m[S—Z—S—R—(X)_p]_n$$

wherein

Z is any thiadiazolyl isomer and can be

if p is zero;

X is any dimercapto thiadiazolyl isomer;

R is selected from the group consisting of:

(a) alkylene of 2–10 carbons which can be straight or branched chain;

(b) cyclic hydrocarbon of 5–7 carbons;

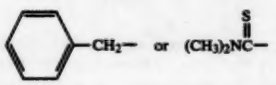
(c) aralkylene of 8–30 carbons;

(d) aromatic of 5–7 carbons;

(e) heterocyclic of 2–6 carbons; and

(f) any one of (a)–(e) above substituted with aralkyl of 8–30 carbons, cyclic hydrocarbon of 5–7 carbons, aromatic of 5–7 carbons, or heterocyclic groups of 2–6 carbons each;

Y is



p is zero or 1;

m is zero or 1 provided M is zero when p is 1; and

n is an integer of 4–1000.

4,800,029

LUBRICATING OIL COMPOSITION

Masashi Dasai, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,931

Claims priority, application Japan, Apr. 11, 1987, 62-087933

Int. Cl.[4] C10M *129/74, 137/04*

U.S. Cl. 252—32.5 **4 Claims**

1. A lubricating oil composition comprising:

(A) a base oil having a naphthene content of at least 30%, an aromatic content of not more than 2%, and a kinematic viscosity at 100° C. of 1.5 to 30 cSt; and

(B) 0.01 to 5% by weight based on the total weight of the composition of a friction modifier.

4,800,030

REFRIGERATOR OIL COMPOSITION

Masato Kaneko; Hiroshi Nagakawa, both of Ichihara, and Kenichi Yamashita, Tokyo, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 944,247

Claims priority, application Japan, Dec. 28, 1985, 60-299381; Dec. 28, 1985, 60-299382

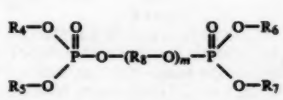
Int. Cl.[4] C10M *137/02, 137/04*

U.S. Cl. 252—32.5 **10 Claims**

1. A refrigerator oil composition comprising:

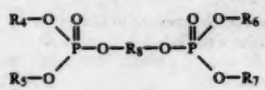
(1) mineral oil, synthetic oil or a mixture thereof; and

(2) at least one phosphorus compound selected from the group consisting of a phosphorus compound represented by the general formula:

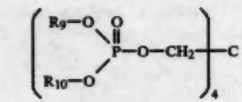


wherein R_4 to R_7 each represent a radical having 1 to 30 carbon atoms selected from an alkyl group, an alkylaryl group, a cycloalkyl group, an aryl group, an alkylcycloal-

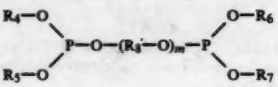
kyl group, an alkylhydroxy group, an oxyalkyl group and a thioalkyl group, R_8 represents a radical having 1 to 10 carbon atoms selected from an alkyl-substituted phosphate and an alkyl-substituted phosphite, and m represents a number of 1 to 4, a phosphorus compound represented by the general formula:



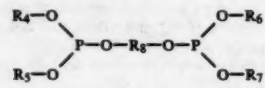
wherein R_4 to R_7 and R_8 are the same as defined above, a phosphorus compound represented by the general formula:



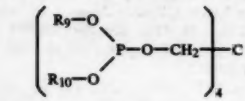
wherein R_9 and R_{10} each represent a radical having 1 to 30 carbon atoms selected from an alkyl group, an alkylaryl group, a cycloalkyl group, an aryl group, an alkylcycloalkyl group, an alkylhydroxy group, an oxyalkyl group and a thioalkyl group, a phosphorus compound represented by the general formula:



wherein R_4 to R_7, R_8 and m are the same as defined above, a phosphorus compound represented by the general formula:



wherein R_4 to R_7 and R_8 are the same as defined above, and a phosphorus compound represented by the general formula:



wherein R_9 and R_{10} are the same as defined above; wherein the amount of Component (2) added is from 0.001 to 10 parts by weight per 100 parts by weight of Component (1).

4,800,031

SULFUR-CONTAINING LUBRICANT AND FUNCTIONAL FLUID COMPOSITIONS

Stephen A. DiBiase, and Joseph W. Pialet, both of Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

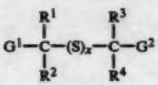
Filed Nov. 7, 1986, Ser. No. 928,773

Int. Cl.[4] C10M *135/26, 135/22*

U.S. Cl. 252—47.5 **24 Claims**

1. A lubricant or functional fluid composition comprising a major amount of at least one oil of lubricating viscosity and a minor amount of:

(A) a sulfur compound characterized by the structural formula



(I)

wherein

R^1, R^2, R^3 and R^4 are each independently H or hydrocarbyl groups, or at least one of R^1 and R^3 is G^1 or G^2, or at least one combination of R^1 and R^2, or R^3 and R^4, together forms an alkylene group containing about 4 to about 7 carbon atoms;

G^1 and G^2 are each independently C(X)R, C=N, R^5—C=NR^6, CON$(R)_2$ or NO_2, or G^1 is a CH_2OH group, or G^2 is COOR, wherein X is O or S, R^5 and each of R are independently H or a hydrocarbyl group, R^6 is H or a hydrocarbyl group; or

when both G^1 and G^2 are R^5C=NR^6, the two R^6 groups together form a hydrocarbylene group linking the two nitrogen atoms: or

when G^1 is CH_2OH and G^2 is COOR, a lactone is formed by intramolecular combination of G^1 and G^2; and

x is an integer from 1 to about 8; provided that when both G^1 and G^2 are C(O)R groups and R^1 and R^3 are H or hydrocarbyl groups, at least one R is a hydrocarbyl group.

4,800,032

ALIPHATIC HYDROCARBON SUBSTITUTED AROMATIC HYDROCARBONS TO CONTROL BLACK SLUDGE IN LUBRICANTS

John P. Murphy, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 8, 1987, Ser. No. 71,003

Int. Cl.[4] C10M *133/44, 127/06*

U.S. Cl. 252—51.5 A **19 Claims**

1. In a lubricating oil composition which allows the accumulation of black sludge in a gasoline fueled internal combustion engine, the improvement which comprises incorporating into the lubricating oil composition a minor amount, effective to inhibit the accumulation of black sludge in said engine, of an aliphatic hydrocarbon substituted aromatic hydrocarbon which comprises of a composition of the formula

$$Ar—R—(Ar)_n \quad (I)$$

wherein each Ar is independently an aromatic nucleus having from 0 to 3 substituents, R is a hydrocarbyl group, and n is an integer ranging from 1 to about 6, with the proviso that n does not exceed the available valences of R.

4,800,033

PROCESS FOR THE NON-CUTTING RESHAPING OF METALS, AND LUBRICANT COMPOSITIONS FOR THIS PROCESS

Karl Stetter, Leibl-Str. 6, D-8200, Rosenheim, Fed. Rep. of Germany

PCT No. PCT/EP86/00318, § 371 Date Jan. 27, 1987, § 102(e) Date Jan. 27, 1986, PCT Pub. No. WO86/07087, PCT Pub. Date Dec. 4, 1986

PCT Filed May 27, 1986, Ser. No. 22,948

Claims priority, application Fed. Rep. of Germany, May 28, 1985, 3519078

Int. Cl.[4] C10M *107/02*

U.S. Cl. 252—55 **18 Claims**

1. A process for the non-cutting reshaping of metals comprising using, during said non-cutting metal reshaping, a lubricant which includes an effective lubricating amount of a synthetic lubricating agent which is at least one substance selected

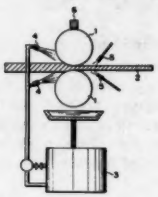
from the group consisting of air oxidized homopolymers of C_2–C_{18}-alkenes having a terminal double bond, air-oxidized copolymers of said C_2–C_{18}-alkenes, air-oxidized copolymers of said C_2–C_{18}-alkenes which include up to about 50% by weight of an oxygen-containing 1-olefin monomer, and esterification and/or saponification products of said air oxidized homopolymers or copolymers, and mixtures thereof, said air oxidized homopolymers or copolymers having an acid number of between 5 and 150 mg of KOH/g, a melt viscosity of between 5 and 100,000 mPa s at 160° C., a melting point above 90° C., and a dicarboxylic acid content of greater than 10% by weight.

4,800,034

COLD ROLLING OIL COMPOSITION FOR ALUMINUM AND ALUMINUM-CONTAINING ALLOYS

Masaru Akao, Utsunomiya; Yoshio Okamoto, Mouka; Akio Manba, and Takehiko Ichimoto, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,592
Claims priority, application Japan, Feb. 19, 1986, 61-34124
Int. Cl.[4] C10M *105/12, 105/24*
U.S. Cl. 252—56 S 6 Claims



1. A water dispersible cold rolling oil composition for aluminum and aluminum-containing alloys, consisting essentially of (a) as lube oil component a mixture of a higher fatty alcohol having 8 to 22 carbon atoms and a higher fatty acid having 8 to 22 carbon atoms and (b) 0.1 to 10 wt.% of one or more dispersant components selected from the group consisting of a water soluble cationic polymer compound and a water soluble amphoteric polymer compound, both having at least 2 basic nitrogen atoms or cationic nitrogen atoms in their molecule and a molecular weight of 1,000 to 10,000,000.

4,800,035

LIQUID LAUNDRY DETERGENT COMPOSITION CONTAINING POLYPHOSPHATE

Guy Broze, Grace Hollogne, and Trazollah Ouhadi, Liege, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 597,793, Apr. 6, 1984, abandoned. This application Sep. 25, 1985, Ser. No. 781,189
Int. Cl.[4] C11D *7/56*
U.S. Cl. 252—99 15 Claims

1. A liquid heavy duty laundry detergent composition comprising a suspension of an alkali metal polyphosphate builder salt in a liquid nonionic surfactant, said composition containing an organic phosphorus compound having an acidic —POH group which is a partial ester of phosphoric acid or phosphorous acid with a mono- or polyhydric alcohol selected from the group consisting of hexylene glycol, ethylene glycol, diethylene glycol, triethylene glycol, higher polyethylene glycol, polypropylene glycol, glycerol, sorbitol, monoglyceride of fatty acid, diglyceride of fatty acid, said organic phosphorous compound being present in effective amount such that the yield value of said composition be at least about 1.6 Pascals.

4,800,036

AQUEOUS BLEACH COMPOSITIONS THICKENED WITH A VISCOELASTIC SURFACTANT

Gene D. Rose; Arthur S. Teot, and Kenneth L. Foster, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 732,013, May 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 715,304, Mar. 25, 1985, abandoned. This application Dec. 8, 1986, Ser. No. 939,338
Int. Cl.[4] A61L *2/18*; C11D *1/86, 3/395, 3/48*
U.S. Cl. 252—102 22 Claims

1. A method of thickening an aqueous bleach composition containing from about 1 to about 10 weight percent of a bleaching agent selected from the group consisting of hydrogen peroxide, potassium perchlorate, sodium hypochlorite, sodium peroxide, sodium chlorite, calcium hypochlorite, sodium hypobromite, and iodine nonionic surfactant complexes, comprising the step of contacting the composition with froma bout 0.05 to about 10 weight percent of a surfactant composition of onium surfactant ions and either aromatic sulfonate counterions or aromatic carboxylate counterions to form an aqueous solution under suitable solution conditions whereby the onium surfactant ions and aromatic counterions associate in the bleach composition to measurably increase the viscosity of the solution thereby forming a viscoelastic surfactant.

12. A thickened aqueous bleach composition made according to the method of claim 1 comprising from about 1 to about 10 weight percent of a bleaching agent selected from the group consisting of a hydrogen peroxide, potassium perchlorate, sodium hypochlorite, sodium peroxide, sodium chlorite, calcium hypochlorite, sodium hypobromite, and iodine nonionic surfactant complexes; from about 0.05 to about 10 weight percent of a surfactant composition of onium surfactant ions and either aromatic sulfonate counterions or aromatic carboxylate counterions, and water; the components of the composition being combined to form an aqueous solution under suitable solution conditions whereby the onium surfactant ions and aromatic counterions associate in the bleach composition to measurably increase the viscosity of the solution thereby forming a viscoelastic surfactant.

4,800,037

PROCESS FOR MAKING A HEAVY DUTY LIQUID DETERGENT COMPOSITION

Louis R. Mazzola, Mahwah, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 5, 1987, Ser. No. 58,298
Int. Cl.[4] C11D *9/10, 15/09*
U.S. Cl. 252—109 11 Claims

1. A process of mixing a color-stable heavy duty liquid detergent composition from a solvent component, an anionic detergent component in acid form, a fatty acid component, an alkali metal hydroxide component, a nonionic detergent component, a hydrotrope component, a builder component and a dye component, the process comprising:

(a) adding substantially all the solvent to a vessel,

(b) adding at least one component of the composition to the vessel to form a vessel mixture,

(c) neutralizing the anionic detergent in acid form to a salt form by combining in the vessel mixture the anionic detergent in acid form with the alkali metal hydroxide, and

(d) adding the remaining components to the vessel mixture in any order so long as the builder component is added to the vessel prior to neutralization of the detergent to salt form by the alkali metal hydroxide.

4,800,038

ACETYLATED SUGAR ETHERS AS BLEACH ACTIVATORS DETERGENCY BOOSTERS AND FABRIC SOFTENERS

Guy Broze, Grace-Hollogne, and Regis Lysy, Oine, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 21, 1988, Ser. No. 146,466
Int. Cl.[4] C11D 7/26, 3/395
U.S. Cl. 252—174.17 **20 Claims**

1. A heavy duty laundry detergent composition comprising a nonionic surfactant, a bleaching agent and, as a bleach activator, detergency booster and fabric softener, an acetylated sugar ether containing at least two fatty acid chains.

4,800,039

FLOCCULATION OF SUSPENDED SOLIDS FROM AQUEOUS SOLUTIONS

Denis E. Hassick, Monroeville, and Joseph P. Miknevich, Coraopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

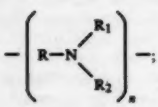
Filed Mar. 5, 1987, Ser. No. 22,179
Int. Cl.[4] C02F 5/10, 1/00
U.S. Cl. 252—181 **4 Claims**

1. A composition for reducing turbidity in aqueous systems comprising:

(a) aluminum chlorohydrate; and (b) at least one water-soluble polymer selected from the group consisting of:

(i) water-soluble polyamines represented by structure (I)

(I)



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of straight or branched C_1–C_8 alkyl, substituted straight or branched C_1–C_8 alkyl and hydrogen; wherein R is selected from the group consisting of straight or branched C_1–C_8 alkyl and substituted straight or branched C_1–C_8 alkyl; and wherein n ranges from 2–50,000; and

(ii) water-soluble C_1–C_8 dialkyl diallyl ammonium polymers; wherein the weight ratio of (a):(b) is at least 20:1, on an active basis.

4,800,040

LOW TEMPERATURE, STORAGE STABLE MIXTURES OF PREPOLYMERS AND FLOW MODIFIERS

Fritz Hostettler, 200 Springhill Rd., Skillman, N.J. 08558

Continuation of Ser. No. 779,304, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 508,245, Jun. 27, 1983, abandoned. This application May 20, 1987, Ser. No. 53,591
The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.
Int. Cl.[4] C09K 3/00; H05B 33/00
U.S. Cl. 252—182.2 **19 Claims**

1. A stable, compatible liquid mixture which does not phase separate when stored for at least 100 hours at temperatures substantially below normal room temperature consisting essentially of:

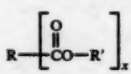
(a) an isocyanato-containing prepolymer obtained from the reactin of (1) a diphenylmethane diisocyanate and (ii) a polyol of the group consisting of linear or slightly branched polyesterpolyols having hydroxyl equivalent weights of from about 400 to about 2250 and linear or slightly branched polyetherpolyols having hydroxyl equivalents of from about 60 to about 2250, said polyol having an average hydroxyl functionality of from 2 to about 3, said diisocyanate and said polyol being used in such quantifies so as to provide at least about 2.5 NCO equivalents per OH equivalent; and

(b) from about 3 to about 35 parts by weight, per 100 parts by weight of said prepolymer, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally liquid at 20° C. or relatively low melting solid which forms a compatible liquid mixture with said prepolymer, (iii) an average molecular weight of from 100 to approximately 1000, and (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups or mixtures of such groups, and oxygen in the form of 1 to 3 ester

groups;

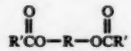
said flow modifier being selected from the group consisting of compounds of Formula I:

I



wherein each R', individually, represents a C_1–C_{18}alkyl, a C_2–C_{12}alkenyl, a C_5–C_7cycloalkyl, or a phenyl group; wherein x is an integer having a value of 1 to 3; and wherein R represents a hydrocarbon group having up to 17 carbon atoms and being selected from group of an alkyl, an alkylene, a C_5–C_7cycloalkyl, a C_5–C_7-cycloalkylene, a phenyl, or a phenylene group and compounds of Formula II:

II



wherein R', individually, has the meanings asigned to R' in Formula I above; and wherein R is a hydrocarbon group having up to 17 carbon atoms selected from the group of an alkylene, a C_5–C_7cycloalkylene, or a phenylene group.

4,800,041

SUSPENSIONS OF SHEET SILICATE MATERIALS AND PRODUCTS MADE THEREFROM

Thomas M. Tymon, and Shelly S. Niznik, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 794,724, Nov. 4, 1985, abandoned. This application Oct. 3, 1986, Ser. No. 913,391
Int. Cl.[4] C04B 20/02, 20/06
U.S. Cl. 252—378 R **17 Claims**

1. A composition comprising:

a 2:1 layered silicate material selected from the group consisting of mica and vermiculite having alkyl ammonium cations which correspond to the formula

wherein R, R_1, R_2 and R_3 are independently selected from H or a C_{2-4} alkyl group, further providing that no more than two of R, R_1, R_2 and R_3 are hydrogen.

4,800,042

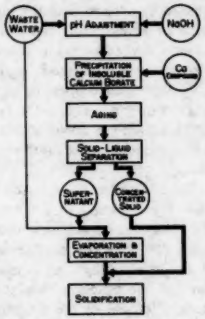
RADIOACTIVE WASTE WATER TREATMENT

Norimitsu Kurumada; Hiroshi Kuribayashi, both of Ibaraki; Setsuo Shibata, Yokohama; Toshikatsu Wakabayashi, Miyagi; Akira Hasegawa, Ibaraki, and Mamoru Shibuya, Aichi, all of Japan, assignors to JGC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 693,692, Jan. 22, 1985, abandoned. This application Jan. 27, 1987, Ser. No. 8,082

Int. Cl.[4] G21F *9/16, 9/08;* F26B *7/00;* B01D *1/00*

U.S. Cl. 252—628 15 Claims



6. A method of treating radioactive waste water containing boric acid consisting essentially of: adding caustic soda to a boric acid containing waste water until the pH is between 7.0 and 8.0; evaporating and concentrating the resultant mixture; adding a soluble calcium compound to the concentrated liquid in an amount sufficient to precipitate calcium borate salts; aging the mixture until the pH has risen to at least about 12; separating the aged mixture into supernatant and precipitate portions; solidifying the precipitate portion; and returning at least a portion of said supernatant portion to said untreated boric acid containing waste water to raise the pH to said waste water.

4,800,043

COLORANTS FOR BALL POINT PEN AND RIBBON INKS DERIVED FROM PARAROSANILINE PROCESS RESIDUE

Robert J. Allen; Louis Rolando de Alvare, and Floyd G. Spence, all of Holland, Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Feb. 24, 1987, Ser. No. 18,299

Int. Cl.[4] C09B *11/10, 29/01;* C09D *11/02, 11/18*

U.S. Cl. 260—391 10 Claims

1. A process for the manufacture of a colorant, comprising:

(a) synthesizing a pararosaniline family dyestuff in the presence of excess low boiling amine to form a dyestuff-containing crude product;

(b) separating substantially all of said dyestuff from said crude product by precipitation as the dyestuff salt followed by filtration;

(c) vacuum distilling the filtrate obtained from step (b) to remove substantially all excess low boiling aromatic amine;

(d) removing the bottoms formed during said distillation; and

(e) dissolving said bottoms into sufficient resinic acid to substantially dissolve said bottoms.

4,800,044

INTERMEDIATES FOR THE PRODUCTION OF 1,2-DITHIOLAN ACID (THIOCTIC ACID)

Guenes Giray, Kleinostheim; Klaus Huthmacher, Geinhausen; Axel Kleemann, Mühlheim, and Thomas Lied, Obertshausen, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

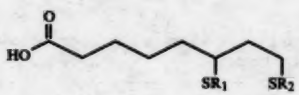
Division of Ser. No. 848,212, Apr. 4, 1986, Pat. No. 4,705,867. This application Jul. 15, 1987, Ser. No. 73,820

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1985, 3512911

Int. Cl.[4] C07C *149/40*

U.S. Cl. 260—399 1 Claim

1. A 6-mercapto-8-hydrocarbyl thiooctanoic acid of formula XII



XII

where R_1 is hydrogen and R_2 is phenyl or benzyl.

4,800,045

SULFITED FATS

Hans-Herbert Friese, Monheim; Friedrich Pieper, Langenfeld-Richrath, and Reinhard Bosse, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 53,998

Claims priority, application Fed. Rep. of Germany, May 26, 1986, 3617691

Int. Cl.[4] C07C *143/90*

U.S. Cl. 260—400 18 Claims

1. A process for the sulfitation of fats having iodine numbers below about 100 comprising the steps of

(a) mixing together

(i) at least one fat having an iodine number below about 100, and

(ii) at least one fatty acid ester having an iodine number of from about 60 to about 100, containing from 12 to 24 carbon atoms in a linear or branched, natural or synthetic fatty acid residue, and wherein the ester residue is from a monofunctional C_1–C_5 alcohol, and wherein the ratio by weight of (i) to (ii) is from about 9:1 to about 1:4:

(b) oxidizing the above mixture at a temperature in the range of from about 70° to about 200° C. and

(c) reacting the oxidized mixture at a temperature in the range of from about 70° to about 110° C. with one or more of an alkali metal hydrogen sulfite, an ammonium hydrogen sulfite, an alkali metal sulfite, or ammonium sulfite.

4,800,046

WATER JET AERATOR WITH DIVERTER VALVE

Jack H. Malek, Northridge, and Stephen A. Markley, Santa Paula, both of Calif., assignors to KDI American Products, Inc., Moorpark, Calif.

Filed Nov. 17, 1987, Ser. No. 121,442

Int. Cl.[4] A61H *33/02;* F04F *5/44*

U.S. Cl. 261—50.3 16 Claims

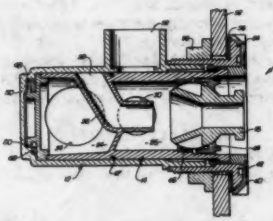
1. An improved water jet aerator, comprising:

an aerator housing having a water inlet conduit, a water outlet conduit and an air inlet conduit; and

a valve body rotatably positioned within the aerator housing, the valve body having an aeration chamber;

wherein as the valve body is rotated in one direction water flow from the water inlet conduit is diverted to the water outlet conduit and the air inlet is proportionally closed to the aeration chamber and as the valve body is rotated in

the other direction water flow from the water inlet conduit to the water outlet conduit is diverted to the aeration



chamber and the air inlet is proportionally opened to the aeration chamber.

4,800,047

GAS AND LIQUID CONTACT SHEET AND PACKING

Michel W. J. P. R. Monjoie, Brussels, Belgium, assignor to Engetra S.A., Fribourg, Switzerland

Filed Feb. 25, 1988, Ser. No. 160,360

Claims priority, application European Pat. Off., May 13, 1987, 87870069.9

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—112.2 **19 Claims**

1. A trickling sheet of rectangular form for a packing means for an installation used for bringing into contact a liquid and a gas flowing in counter-current, characterised in that it comprises, as considered along a first side (3), two zones of equal width the one zone corrugated (5) and the other zone, in comparison, being essentially flat (6), both provided with spacer bosses (7) situated, in the corrugated zone (5), on the crests (8) of the corrugations on both its faces and spaced in the same direction as the other second side (4) of the rectangle, defining the height of the sheet when in service, these bosses being situated, in the flat zone (6), symmetrically with the previously-mentioned bosses in the corrugated section (5) with respect to the median line (9) separating the two zones (5 and 6), the bosses (7) which correspond to one another projecting from the same side of the thickness of the sheet, and in that the plane (10a) of the flat zone (6) is parallel to the mean plane (10) of the sheet in its corrugated zone (5) and is offset by a distance such that the tops of all the bosses (7) of one of the two faces of the strip are in one and the same plane.

4,800,048

DIE DRAWING PROCESS AND APPARATUS FOR PIEZOELECTRIC POLYMER FILMS AND TUBES

Philip E. Bloomfield, Lower Merion; Richard A. Ferren, Lower Gwynedd, and Dean H. Wickwire, Glen Moore, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 835,500, Mar. 3, 1986, abandoned, which is a continuation of Ser. No. 590,106, Mar. 16, 1984. This application Nov. 30, 1987, Ser. No. 126,993

Int. Cl.[4] B29C *47/02*

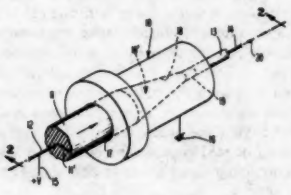
U.S. Cl. 264—22 **22 Claims**

1. A process for the production of a piezoelectric tubular polymer product having an electrically conductive central core and tube walls comprised of the polymer by mechanical stretching and simultaneous electrical polarization, comprising:

(a) forming a polymer material tubular blank having a tube wall thickness that exceeds that of the polymer product and a central electrically conductive core;

(b) stretching the tubular blank while in a solidified state and reducing the thickness of the blank by pulling the blank between opposed converging stationary surfaces while maintaining the polymer material blank at a temperature below its melting point, said surfaces defining a stretching chamber having an entrance opening of a dimension substantially equal to or greater than the blank thickness and an exit opening of a dimension that is about equal to the product thickness, said converging stationary surfaces are the interior surfaces of a tapered, conically shaped die, said die having an entrance opening of a size that is substantially equal to or greater than the cross sectional size of the tubular blank with its core and the exit opening is of a size substantially equal to the cross sectional area of the tubular product;

(c) simultaneously, while stretching in (b), applying an electric field across the thickness of the tubular blank within the stretching chamber, said electric field having a direct current voltage that is below the breakdown voltage of the material but the voltage, in combination with the residence time of the blank within the chamber, is of sufficient intensity to provide the electrical polarization to



form the piezoelectric polymer product that is being pulled from the stretching chamber.

13. In combination, an apparatus for the production of a piezoelectric tubular polymer product having an electrically conductive central core and tube walls comprising the polymer from a solidified polymer material blank having a blank thickness that exceeds that of the polymer product, which comprises:

(a) a polymer drawing die having internal opposed converging surfaces that form a stretching chamber, said chamber having an entrance opening adapted to receive the blank that is about equal to or greater in cross sectional area than the material blank that it is adapted to receive and an exit opening adapted to discharge the product that is about equal to the cross sectional area of the polymer product, said converging stationary surfaces are the interior surfaces of a tapered, conically shaped die that is adapted to receive a tubular blank having a central wire core to provide a tubular product with a wire core;

(b) electrical field producing means adapted to subject the stretching chamber and a polymer material blank passing therethrough to a direct current electric field; and

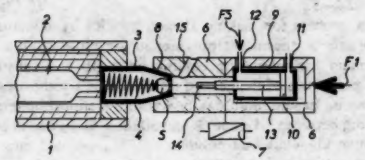
(c) pulling means operatively associated with the die in (a) and adapted to pull a tubular polymer product from the exit opening of the stretching chamber of the die to provide simultaneous stretching and electrical poling to a polymer material blank while in a solidified state passing through the stretching chamber of the die.

4,800,049

PROCESS AND APPARATUS FOR OBTAINING PLASTIC MOLDED OBJECTS

Elie Gras, Le Ronzon, France, assignor to Anver, Maisons Alfort, France

Filed May 12, 1987, Ser. No. 49,809
Claims priority, application France, May 26, 1986, 86 07446
Int. Cl.[4] B29C 45/06, 45/20, 39/42, 39/38
U.S. Cl. 264—26 16 Claims



1. A method of producing plastic molded objects, comprising the steps of :

positioning a mold having a first opening at a first end thereof, and a second opening at a second end opposite said first end, on a turntable, and said first and second openings of said mold each having a male insert ;

positioning said turntable so that said first end of said mold faces a female end of vacum-creating means, said female end of said vacuum-creating means being adapted to sealingly receive said male insert of said first opening, and said second end of said mold faces a female end of a plastisol injection means, said female end of said plastisol injection means being adapted to sealingly receive said male insert of said second opening ;

inserting said male insert of said first opening into said female end of said vacuum-creating means creating a vacuum at slightly less than atmospheric pressure within said mold through said male insert of said first opening ;

removing said male insert of said first opening from said female end of said vacuum-creating means while maintaining said vacuum within said mold ;

inserting said male insert of said second opening into said female end of said plastisol injection means ;

filling said mold by injecting a liquid plastisol at a pressure of less than 1 Mpa from said plastisol injection means through said male insert of said second opening and into said mold while maintaining said vacuum within said mold ;

subjecting said filled mold to high frequency heating and pressure ;

removing said male insert of said second opening from said female end of said plastisol injection means ;

cooling said filled and heated mold to form a plastic molded object ; and

removing said plastic molded object from said mold.

4,800,050

ADAPTIVE CONTROL PROCESS FOR FOAMING AND FUSING PLASTICS

Ortwin Hahn, Hüfferweg 9, Paderborn, Fed. Rep. of Germany (4790), and Johannes Hümmler, Finnentrop, Fed. Rep. of Germany, assignors to Ortwin Hahn, Paderborn, Fed. Rep. of Germany

Filed Nov. 20, 1986, Ser. No. 932,829
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1985, 3541258
Int. Cl.[4] C08J 9/22; B29C 67/22
U.S. Cl. 264—40.6 19 Claims

1. A control process for foaming and fusing plastics to be molded in a foaming and fusing device in which the control process operates in cycles, each cycle comprising the steps of:

(a) providing a steam mold;

(b) feeding a particulate foamable thermoplastic resin material into said mold;

(c) heating said resin material in said mold;

(d) cooling said foamed and fused article in said mold; and

(e) releasing said foamed and fused article from said mold;

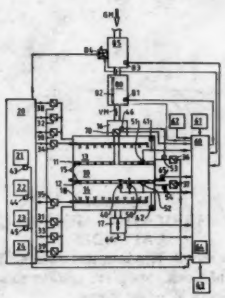
(f) providing control criteria, comprising a time period, one of a pressure and a temperature limit value for the conditions evolving in the device such control criteria belonging to a certain cycle comprising a control criteria set, and with each cycle quality values of predetermined characteristics determined by measurements taken from the respective plastic part or an agglomerate cake situated in the device;

(g) starting and completing a first cycle of each of said steps (b) through (e) in response to said control criteria;

(h) generating values indicative of the quality of said fused material from said cycle;

(i) starting and completing a second cycle of each of said steps (b) through (e) in response to further said control criteria;

(j) generating a new set of said control criteria for each new



cycle from prior said control criteria responsive to the quality values measured with such prior cycle of the control process,

(k) combining the quality values of each cycle to provide a deviation and storing said deviation together with the control criteria set of the respective cycle in a control device store up to a predetermined number of such stored sets,

(l) determinging criteria averages from each of the stored control criteria to determine an average of the stored quality deviations, and

(m) for each cycle, determining a new set of control criteria through statistical variations of one or more of the control criteria around their criteria average with a variance determined according to the average quality deviation, such new set of control criteria being preset for the control of the next working cycle and the related quality values,

(n) comparing said deviation being determined to the stored deviations and, if it is smaller than one of the stored deviations, replacing the set with the largest deviation in the store by the new one.

4,800,051

METHOD FOR FABRICATING CERAMIC MATERIALS

Man F. Yan, Berkeley Heights, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 647,273, Sep. 4, 1984, abandoned, which is a continuation of Ser. No. 374,311, May 3, 1982, abandoned. This application Apr. 13, 1987, Ser. No. 37,074

Int. Cl.[4] C04B *35/64*

U.S. Cl. 264—56 19 Claims

1. A method of preparing bodies of ceramic material comprising at least one metal oxide selected from the group consisting of Al_2O_3, ZrO_2 and TiO_2, which comprises

preparing metal oxide(s) powder by hydrolysis technique including hydrolyzing suitable metal alkoxide(s), washing, drying, granulating and calcining,

ball milling the calcined metal oxide(s) powder as a slurry comprising an aqueous solution having pH selected to maximize the powder dispersion in the solution at least during the said ball milling,

compacting the dispersed powder from the ball-milled slurry into a powder compact, said compacting including drawing-off a supernatant liquid from the ball-milled slurry, forming powder from the supernatant liquid into at least one powder compact, and drying the powder compact(s), and

sintering the powder compact(s) at suitable, relatively low sintering temperatures.

4,800,052

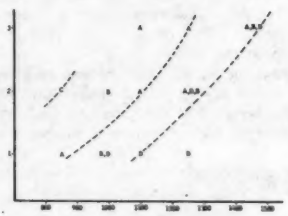
METHOD OF FABRICATING MOLTEN CARBONATE CATHODES

Thomas E. Swarr, South Windsor, and John C. Trocciola, Glastonbury, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Division of Ser. No. 812,218, Dec. 23, 1986, Pat. No. 4,708,917. This application Dec. 17, 1986, Ser. No. 943,232

Int. Cl.[4] C04B *35/64*

U.S. Cl. 264—65 2 Claims



1. A method of fabricating a molten carbonate fuel cell cathode comprising:

(a) prefiring a composition comprising oxides of nickel and lithium salts in an oxidizing atmosphere at temperatures of about 600° C. to about 1000° C.;

(b) mixing barium salts with said prefired composition;

(c) forming said prefired composition into an electrode; and

(d) sintering said electrode in an oxidizing atmosphere at about 850° C. to about 1250° C.;

wherein said electrode has improved strength.

4,800,053

INJECTION MOLDING PROCESS WITH REACTIVE GAS TREATMENT

Bernard D. Bauman, Coopersburg; David R. Ruprecht, Laurys Station; Paul D. Marsh, Allentown, and Mark A. Williams, Souderton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 7,690, Jan. 28, 1987, Pat. No. 4,752,428. This application Apr. 26, 1988, Ser. No. 186,322

Int. Cl.[4] B29C *45/77*

U.S. Cl. 264—83 15 Claims

1. In a process for making shaped articles by injecting a thermoplastic or thermoset polymer into a mold cavity, the improvement for increasing coating adhesion and substrate bonding properties of the shaped articles which comprises:

maintaining in said mold cavity a reactive atmosphere containing between 0.1 mole % and 50 mole % F_2 and at least 20 ppm O_2 while said polymer is being injected into the mold cavity and injecting said polymer into the mold cavity at a rate such that any portion of the polymer contacts the reactive atmosphere for a period of time not exceeding 0.5 seconds.

4,800,054

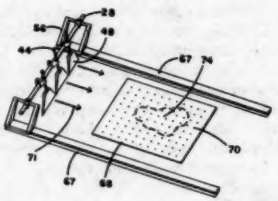
METHOD FOR SHAPING A MOLDING COMPOUND APPLIED TO A SURFACE FOR MODIFYING THE SURFACE

Jerome R. Roestenberg, 11 Woodpecker La., Levittown, N.Y. 11756

Filed Jun. 5, 1987, Ser. No. 58,436

Int. Cl.[4] B28B *11/18*; B29C *37/02*; B32B *35/00*

U.S. Cl. 264—86 5 Claims



1. A method for modifying a surface within a selected area of a panel to a desired contour with a molding compound, the method comprising:

(a) applying to the surface to be modified, a sufficient amount of molding compound to enable filling voids and irregularities in the surface and to enable making the desired contour,

(b) locating a flexible mold plate, having a plurality of holes for releasing trapped fluids and molding compound through the mold plate, over the surface to be modified and the molding compound,

(c) applying pressure on mold plate, at a plurality of locations for deforming the mold plate in the region of the locations into the desired contour while releasing fluids from the molding compound and excess molding compound through the holes, and for forming the molding compound under the mold plate into the desired contour,

(d) removing the excess molding compound, and

(e) when the molding compound is hardened sufficiently to retain the desired contour, removing the mold plate to provide a contoured molded surface which requires little post finishing.

4,800,055

PROCESS FOR MAKING A GRANULAR PRODUCT CONTAINING SODIUM TRIPHOSPHATE

Helmut Klee, Hürth; Hans Haas, Swisttal; Werner Kowalski, Wellerswist, and Theo Dahmen, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1986, Ser. No. 835,894

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1985, 3509661

Int. Cl.[4] C01B *25/30*

U.S. Cl. 264—118 11 Claims

1. In the process for making a hydrated product consisting completely or partially of sodium triphosphate for use in detergent and cleaning compositions by initially mixing pulverulent sodium triphosphate containing less than 22 wt.-% water, alone or in admixture with at least one further pulverulent constituent of the detergent or cleaning composition, with water for hydrating the sodium triphosphate and compressing the mixture obtained; the improvement which comprises premixing a sodium triphosphate containing at least 91.8 wt.-% $Na_5P_3O_{10}$ having a phase-I content of at least 13 wt.-% and a particle size smaller than 0.3 mm with a quantity of water sufficient for hydrating the sodium triphosphate to a water content from about 8.5 to at most 22 wt.-%; admitting continuously the mixture obtained to a roller press; compressing in it the mixture under a linear pressure of 10,000–20,000 KN per cm roller length to a solid sheet and ultimately crushing the said solid sheet to desired fineness with the resultant formation of a dry final product having a content of water of crystallization from 13 to 22 wt.-%, a high abrasion resistance and a bulk density of from 700 to 1100 g/l.

4,800,056

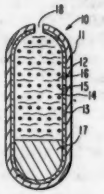
PROCESS FOR MAKING DISPENSER WITH COOPERATING ELEMENTS

James B. Eckenhoff; Felix Theeuwes, both of Los Altos, and Joseph C. Deters, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 591,824, Mar. 21, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 829,356

Int. Cl.[4] A61K *9/24, 9/28;* B29C *41/02*

U.S. Cl. 264—129 4 Claims



1. A process for manufacturing a dispenser for delivering a beneficial agent to a biological environment of use, wherein the dispenser comprises: a capsule comprising a composition dissolvable at least in part in a fluid present in the environment in use said capsule comprising a mouth, a cap for the capsule and an exterior wall on the capsule, and wherein the process comprises the step of:

(a) forming a layer comprising a hydrophilic composition into a shape corresponding to the internal shape of the mouth of the capsule;

(b) inserting the layer through the mouth to the bottom of the capsule;

(c) capping the mouth of the capsule with a cap designed to close the capsule to provide an assembled capsule;

(d) surrounding the assembled capsule with an exterior wall permeable to the passage of fluid and substantially impermeable to the passage of a beneficial agent; and,

(e) drilling a port through the wall and through the capsule distant from the layer for communicating with the interior of the dispenser.

4,800,057

METHOD OF PRODUCING A NOVEL STRUCTURAL ELEMENT

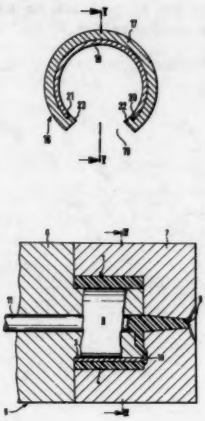
Jürgen Rabe, Aurachtal, Fed. Rep. of Germany, assignor to INA Wälzlager Schaeffler KG, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 105,548

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635247

Int. Cl.[4] B29C *45/14*

U.S. Cl. 264—229 2 Claims



1. A method of producing a structural element comprising a metallic sleeve provided with a continuous axial slot at a circumferential area and an outer surface completely surrounded by a polymeric jacket comprising producing a metallic sleeve (3,18) with an inner diameter corresponding to a maximum of the inner diameter of the finished structural element (1,16), placing said metallic sleeve on a core (8) in an injection molding apparatus (5), said core (8) receiving the metallic sleeve (3,18) and elastically widening the metallic sleeve (3,18) when placed on the core (8), closing the molding apparatus and injecting polymeric material into the molding apparatus, at least partially filling the slot (2,19) of the metallic sleeve (3,18) with the material of the jacket (4,17) during formation of the jacket (4,17) so that the boundary surfaces of the slot (2,19) of the metallic sleeve (3,18) are at least partially covered.

4,800,058

METHOD FOR THE PREPARATION OF RIGID CAST OR TRANSFER MOLDED THERMOSET POLYURETHANE MODIFIED POLYISOCYANURATE COMPOSITIONS

Usama E. Younes, Newtown Square, Pa., assignor to Arco Chemical Company, Newtown Square, Pa.

Filed Aug. 24, 1987, Ser. No. 88,455

The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.

Int. Cl.[4] B29C *45/02*

U.S. Cl. 264—328.4 12 Claims

1. A method for the preparation of a rigid cast or transfer molded polyurethane modified polyisocyanurate thermoset polymer composition which comprises conveying from a mix-

ing chamber into a mold cavity of the desired configuration, which may be compressed,to react at temperatures of from about ambient to about 140° C. a reaction mixture of an organic di- or polyisocyanate, from about 2 to about 50 parts by weight of a cyclic alkylene carbonate, and from about 2 to about 50 parts by weight of a polyether polyol, based on 100 parts of the isocyanate-carbonate-polyol composition, in the presence of a soluble adduct of a tertiary amine and a cyclic alkylene carbonate as catalyst at a concentration of from about 0.005 to about 5.0 weight percent based on the total composition.

4,800,059

PROCESS AND APPARATUS FOR LOADING A TIRE PRESS

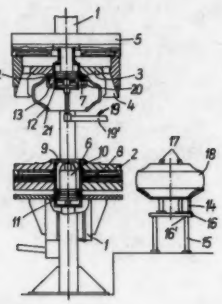
Günter Drewel, Seevetal; Horst Enoch, and Klaus Grotkasten, both of Hamburg, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed Jan. 30, 1987, Ser. No. 9,386

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1986, 3603076

Int. Cl.[4] B29C *33/30, 35/00;* B65G *47/90*

U.S. Cl. 264—502 **6 Claims**



1. In a process for introducing into a heated tire press a tire blank to be vulcanized and having an upper and a lower bead, said tire press having at least two tire forming, said blank being introduced into the press from a tire blank stand, said process comprising engaging said tire blank by a loader, swinging said tire blank into position between said tire forming pieces of said heated tire press and engaging said upper bead of said tire blank with said heated tire press, then releasing and pivoting away said loader from said tire blank, closing said tire press so that said upper and said lower beads respectively contact on an upper and lower rim ring of said heated tire press, fixing said upper and lower beads thereon by air pressure and finally closing said tire forming pieces further, the improvement wherein said loader engages said tire blank on the inside of said upper bead of said tire blank from below upon insertion into the blank from below and directly mounts said tire blank on said upper rim ring of an upper one of said tire forming pieces of said heated tire press.

3. An apparatus for inserting a tire blank to be vulcanized having an upper and a lower bead into a heated tire press having at least two tire forming pieces from a tire blanks stand comprising:

an upper bead ring fixed in an upper one of said tire forming pieces;

a loader positioned adjacent said heated tire press and insertable from below into said tire blank;

means for pivoting said loader with said blank thereon into a position between said tire forming pieces from said tire blank stand and for affixing an upper bead of said blank, gripped from below by said loader, directly on said upper bead ring, said loader having a plurality of clamp jaws distributed around the circumference of said upper bead of said tire blank when said loader is positioned adjacent said tire blank, said clamp jaws being swingable between a centering position supporting said tire blank from below by said upper bead and a position inwardly of inner edges of said upper and lower beads, said loader and said clamps being insertable from below into a blank on said stand and retractable from below from a blank mounted on said upper bead ring; and

a frame member on said stand through which clamp jaws of said loader pass on being raised with said tire blank mounted thereon.

4,800,060

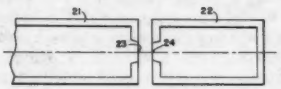
WINDOW ASSEMBLY FOR POSITRON EMITTER

Gvirol Goldring, Rehovot, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Aug. 3, 1982, Ser. No. 404,851

Int. Cl.[4] G21G *1/10*

U.S. Cl. 376—202 **10 Claims**



1. A system for the production and transportation of short lived isotopes, comprising:

accelerator means, having a vacuum chamber and a window, for directing an irradiating particle beam through said window;

container means for holding a material capable of being converted to short lived isotopes upon irradiation by the irradiating particle beam of said accelerator means, said container means comprising a hermetically sealed container having a window through which said irradiating particle beam can pass, said container window being separate and distinct from said window of said accelerator means.

4,800,061

APPARATUS FOR LOADING FUEL RODS INTO GRIDS OF NUCLEAR FUEL ASSEMBLIES

John M. Shallenberger, Fox Chapel Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 6, 1987, Ser. No. 46,475

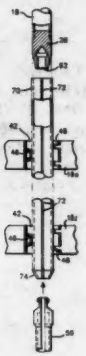
Int. Cl.[4] G21C *21/00*

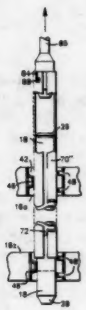
U.S. Cl. 376—261 **14 Claims**

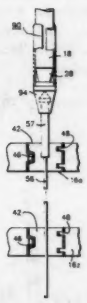
1. For use with a nuclear fuel assembly including a plurality of support grids having cells for receiving fuel rods and with detents disposed within the respective cells for resiliently engaging and laterally supporting the fuel rods received therein, an apparatus for facilitating scratchless insertion of each fuel rod into cells of said support grids, said apparatus comprising:

a thin-walled metallic tubular member which is long enough to extend through at least a majority of said plurality of support grids, and is positionable so as to have its thin wall interposed, during insertion of each fuel rod, between the latter and the detents within the cells receiving it, said thin-walled tubular member having a substantially uniform wall thickness of not more than about 0.008 inch, an as-formed inner diameter substantially equal to the outer diameter of said fuel rod, and a longitudinal slit formed in the wall of the tubular member so as to render said wall

resiliently deflectable in a diameter-reducing sense, said longitudinal slit having a width sufficient to preclude overlapping of the edges of said wall along the slit, and







insufficient for any of said detents to enter the slit when the wall of the tubular member is in position between said detents and said fuel rod.

4,800,062

ON-SITE CONCRETE CASK STORAGE SYSTEM FOR SPENT NUCLEAR FUEL

Philip A. Craig, Federal Way; Richard T. Haelsig, Bellevue; John D. Kent, Gig Harbor, and Duane S. Schmoker, Federal Way, all of Wash., assignors to Nuclear Packaging, Inc., Federal Way, Wash.

Filed Feb. 23, 1987, Ser. No. 29,097
Int. Cl.[4] G21C *19/40*
U.S. Cl. 376—272 8 Claims

1. A method of storing spent nuclear fuel assemblies including the steps of:

transferring the fuel assemblies from a spent-fuel pool to a moveable concrete storage cask located outside the spent-fuel pool;

maintaining a barrier between the fuel and the concrete in the cask to prevent contamination of the concrete by the fuel;

maintaining the concrete storage cask containing the spent fuel on site at the reactor complex for some predetermined period;

transferring the fuel assemblies from the concrete storage cask to a shipping container; and,

recycling the concrete storage cask.

4,800,063

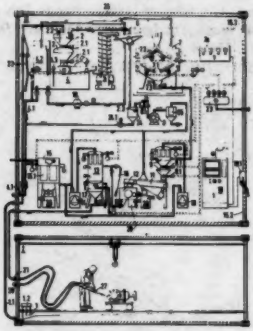
PROCESS AND APPARATUS FOR DECONTAMINATING PLANT PARTS CONTAMINATED WITH RADIOACTIVE MATERIAL

Christian Mierswa, Binzen, and Friedrich Schmutz, Weil am Rhein, both of Fed. Rep. of Germany, assignors to Ernst Schmutz GmbH., Weil an Rhein, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,978
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402702
Int. Cl.[4] B24C *1/00*
U.S. Cl. 376—316 8 Claims

1. A process for decontaminating parts of nuclear power plants which are contaminated with radioactive material, wherein surface layers are removed from said parts, said process comprising: treating the parts to be decontaminated with a jet of pressurized water which contains a granular water insoluble abrasive to form a mixed effluent, separating the mixed effluent of water, abrasive and detached particles into an aqueous phase and a sludge phase, drying the sludge phase to provide a substantially dry residue, separating the resulting dry residue into larger particles larger than a predetermined size and particles smaller in size, separating the larger particles into

non-abrasive materials and reusable abrasive, recycling the reusable abrasive to the pressurized water for forming the part



treating jet of water under pressure, and disposing of the remaining separated particles and non-abrasive materials.

4,800,064

PROCESS FOR PRODUCING TUNGSTEN HEAVY ALLOY SHEET USING HYDROMETALLURGICALLY PRODUCED TUNGSTEN HEAVY ALLOY

Preston B. Kemp, Jr., Athens; Walter A. Johnson, Towanda, and Nelson E. Kopatz, Sayre, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 14, 1988, Ser. No. 143,864

Int. Cl.[4] B22F *1/00*

U.S. Cl. 419—36 **5 Claims**

1. A process for producing a sheet of tungsten heavy alloy, said process comprising:

(a) forming a solution of chemical compounds containing metal values of said alloy in the correct proportion as in said alloy;

(b) crystallizing said compounds from said solution and drying said compounds;

(c) reducing said compounds to their respective metals wherein each particle is an admixture of the alloy components;

(d) forming a slurry of said metals and a liquid medium;

(e) removing said liquid medium from said metals and forming a planar cake of said metals;

(f) drying said cake; and

(g) sintering said cake to a density equal to or greater than about 90% of the theoretical density of said alloy to form said sheet.

4,800,065

PROCESS FOR MAKING CERAMIC-CERAMIC COMPOSITES AND PRODUCTS THEREOF

Leontios Christodoulou, Baltimore; Dennis C. Nagle, Ellicott City, and John M. Brupbacher, Catonsville, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 943,899, Dec. 19, 1986, Pat. No. 4,710,348, which is a continuation of Ser. No. 662,928, Oct. 19, 1984, abandoned. This application Nov. 18, 1987, Ser. No. 122,306

Int. Cl.[4] C22C *1/10, 32/00*

U.S. Cl. 420—129 **42 Claims**

1. A method for the production of ceramic-ceramic composite materials comprising precipitating at least one ceramic phase in a ceramic precursor matrix by contacting ceramic forming reactants, in the presence of a non-reactive solvent ceramic precursor in which the ceramic forming reactants are more soluble than ceramic phase, at a temperature at which sufficient diffusion of the reactants into the solvent ceramic precursor occurs to cause reaction of the ceramic forming reactants, raising the temperature above the melting temperature of the solvent ceramic precursor to precipitate a substantially uniform distribution of the ceramic phase in the ceramic precursor matrix, thereby forming a composite material, reacting the ceramic precursor matrix of the composite material with a matrix reactive species to convert at least a portion of the ceramic precursor matrix to a ceramic matrix, and recovering a ceramic-ceramic composite.

4,800,066

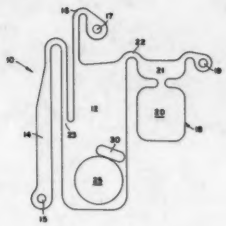
END OF LIFE INDICATOR FOR AUTOMATIC TOILET CLEANING DEVICES

Richard G. Sinclair, and Sylvester Sowell, both of Columbus, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Jul. 21, 1986, Ser. No. 887,751

Int. Cl.[4] G01N *31/22*

U.S. Cl. 422—55 **8 Claims**



1. An end of life indicator for an aqueous solution containing an active component, and having a pH less than a predetermined value, comprising:

a core of water soluble dye, and

a coating completely surrounding said core, said coating being a polymer composition substantially resistant to an aqueous solution and hydrolyzable when the end of life indicator is within an aqueous media having a pH above a predetermined value, exhaustion of an active component being indicated by release of said dye upon hydrolysis of said coating.

4,800,067

DEVICE FOR DETECTING GASES WHICH MUST BE TREATED BEFORE TESTING

Johannes Heckmann, Luebeck, and Wolfgang May, Reinfeld, both of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 2, 1987, Ser. No. 69,386

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625085

Int. Cl.[4] G01N *21/05, 21/78*

U.S. Cl. 422—86 **4 Claims**

1. Gas testing device comprising a transparent tube having

breakable tips at each end, which when broken, define an inlet and an outlet at the respective ends of said tube, a plurality of different material layers for detecting gases arranged in said tube in succession, at least two spacedapart retainer elements arranged between at least two of said material layers of different material and defining a valve space between said layers, one of said retainer elements being gas-permeable and the other of said retainer elements defining a communication passage between said valve space and an adjacent one of said layers of different materials, said communication passage having a closeable valve seat, a valve member in said valve space engageable with said valve seat and forming a valve therewith to close said passage, and biasing means biasing said valve member on said seat, said valve being openable when there is a gas flow through said tube in a direction opposite to said biasing means and being closeable by said biasing means to close off said passage in the communication between said layers of different material.

4,800,068

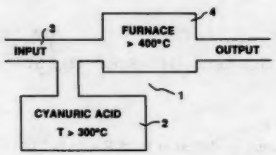
SYSTEM FOR NO REDUCTION USING SUBLIMATION OF CYANURIC ACID

Robert A. Perry, 524 Hazel St., Livermore, Calif. 94550

Division of Ser. No. 859,951, May 5, 1986, Pat. No. 4,731,231. This application Mar. 23, 1987, Ser. No. 28,985

Int. Cl.[4] F01N 3/10

U.S. Cl. 422—173 10 Claims



1. A device useful for reducing the NO content of a gas stream comprising:

storage means containing a compound which upon sublimation generates HNCO;

means for subliming said compound in operation;

means for contacting said NO-containing gas stream with said generated HNCO;

means for raising the temperature of said gas contacted with HNCO to a level effective for heat induced decomposition of HNCO and resultant lowering of the NO content of the gas stream; and

output means for resultant gas stream containing a lowered content of NO.

4,800,069

ZINC RECOVERY FROM FURNACE DUST

Derek J. Fray, Trumpington, England, assignor to National Research Development Corporation, London, England

Continuation-of Ser. No. 883,920, Jul. 10, 1986, abandoned. This application Sep. 21, 1987, Ser. No. 99,677

Claims priority, application United Kingdom, Jul. 24, 1985, 8518746

Int. Cl.[4] C01G 11/00, 21/16, 9/04

U.S. Cl. 423—97 11 Claims

1. A process for recovering a metal selected from the group consisting of zinc, cadmium and lead from furnace dust, said process comprising the steps of:

adding to the dust a zinc compound selected from the group consisting of zinc oxide and zinc chloride unless the dust already contains a compound selected from the group consisting of zinc oxide and zinc chloride;

treating said dust at an elevated temperature with a halogen and an additional oxidant selected from the group consisting of air and oxygen; and

recovering the metal in the form of volatilized metal halide;

said elevated temperature being at least 624 degrees C when said halogen is iodine;

at least 650 degrees C when said halogen is bromine; and

at least 732 degrees C when said halogen is chlorine.

4,800,070

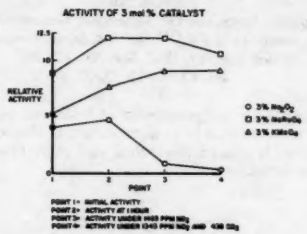
CATALYSTS FOR ABSORPTIVE AIR SEPARATION

Richard T. Carlin, Buffalo, N.Y., and Brian R. Dunbobbin, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 8, 1987, Ser. No. 94,637

Int. Cl.[4] C01B 13/00

U.S. Cl. 423—210.5 8 Claims



1. In a method for separating oxygen from an oxygen-containing gas comprising reacting an oxygen acceptor consisting essentially of a molten salt solution of alkali metal nitrates and nitrites with said gas in an absorption reaction to produce an oxygen-depleted gas effluent, separately decomposing the oxidized acceptor to yield oxygen and regenerated oxygen acceptor, the improvement comprising adding to the oxygen acceptor a catalytic amount of a transition metal oxide selected from the group consisting of oxides of manganese, ruthenium, rhenium, osmium, rhodium, iridium and mixtures thereof.

4,800,071

FILTRATION AIDS FOR REMOVAL OF CALCIUM SOLIDS FROM AQUEOUS PHOSPHORIC ACID

Ralph W. Kaesler, Barrington, Ill.; Donald G. Robinson, Lakeland, Fla.; Wayne L. Moss, Columbia, S.C., and Brian K. Failon, Wheaton, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 3, 1988, Ser. No. 189,870

Int. Cl.[4] C01B 25/16; B01D 21/01; B03D 3/00; C02F 1/52

U.S. Cl. 423—321 R 5 Claims

1. A method for increasing the filtration rate for the removal of gypsum and gangue from phosphoric acid in a phosphoric acid production facility comprising the addition of a sulfonated acrylamide polymer containing at least about 1 mole percent sulfonate and having an RSV of at least 10, sulfonated polymer being selected from the group consisting of 2-acrylamido-2-methlpropanesulfonate/acrylamide, 2-acrylamido-2-methylpropanesulfonate acrylate/acrylamide and 2-acrylamidoethanesulfonate/acrylate/acrylamide.

4,800,072

ANHYDROUS CEROUS NITRATE-AMMONIUM NITRATE COMPLEX AND A PROCESS FOR ITS PREPARATION FROM CERIC AMMONIUM NITRATE

Peter S. Gradeff, Pottersville, and Fred G. Schreiber, Highland Park, both of N.J., assignors to Rhone Poulenc, Inc., Monmouth Junction, N.J.

Filed Jan. 14, 1988, Ser. No. 143,978
Int. Cl.[4] C06B 1/04
U.S. Cl. 423—396 15 Claims

1. A Process for preparing an anhydrous cerous nitrate complex comprising:

(a) contacting water-free ceric ammonium nitrate with a suitable reducing agent under anhydrous conditions; and

(b) maintaining contact for a period of time sufficient to reduce cerium (IV) to cerium III and form the anhydrous cerous nitrate complex.

15. Anhydrous cerous nitrate-ammonium nitrate-ammonia complex.

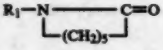
4,800,073

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Erik Bengtsson, Surte, and Ulf Andersson, Gothenburg, both of Sweden, assignors to EKA Nobel AB, Surte, Sweden

Filed Mar. 21, 1988, Ser. No. 171,106
Int. Cl.[4] C01B 15/02
U.S. Cl. 423—588 4 Claims

1. A process for the production of hydrogen peroxide by reduction and oxidation of an anthraquinone, characterized in that as solvent is used an alkyl substituted caprolaktam having the general formula



wherein R_1 is an alkyl group having from 6 to 12 carbon atoms.

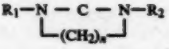
4,800,074

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Erik Bengtsson, Surte, and Ulf Andersson, Gothenburg, both of Sweden, assignors to EKA Nobel AB, Surte, Sweden

Filed Mar. 21, 1988, Ser. No. 171,107
Int. Cl.[4] C01B 15/02
U.S. Cl. 423—588 6 Claims

1. A process for the production of hydrogen peroxide by reduction and oxidation of an anthraquinone, characterized in that as solvent is used a cyclic urea derivative having the general formula



wherein n is 1 to 5 and wherein R_1 and R_2 are alkyl groups having from 1 to 22 carbon atoms.

4,800,075

FIXED-BED HYDROGEN PEROXIDE CATALYST

Colle L. Jenkins, Memphis, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1987, Ser. No. 132,475
Int. Cl.[4] C01B 15/02
U.S. Cl. 423—588 5 Claims

1. In a cyclic process employing a fixed-bed reactor for the production of hydrogen peroxide involving hydrogenating a working solution comprising quinones dissolved in solvents in the presence of a hydrogenation catalyst, oxidizing the hydrogenated working solution, separating the hydrogen peroxide from the oxidized working solution and then recycling the working solution for further hydrogenation, the improvement comprising the use of a catalyst comprising palladium deposited on a catalyst support which contains alpha alumina, wherein the alpha alumina content is about 5 to 99 percent of the support and the surface area by BET measurement of the supported catalyst is from about 108 to 5 m^2/g.

4,800,076

SKIN CARE COMPOSITIONS

Gulgunji R. Bhat, Ringoes; Elvin R. Lukenbach, Somerset, and Ralph C. Stutzman, Ringoes, all of N.J., assignors to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.

Filed Mar. 13, 1987, Ser. No. 25,453
Int. Cl.[4] A61K 7/35, 47/00
U.S. Cl. 424—69 8 Claims

1. A skin care composition comprising a lotion, cream or anhydrous base containing non-volatile oils and waxes and talc wherein the ratio of the non-volatile ingredients to talc is from about 0.4:1 to 3.2:1.

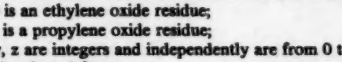
4,800,077

GUERBET QUATERNARY COMPOUNDS

A. J. O'Lenick, Jr., and Wayne C. Smith, both of Lilburn, Ga., assignors to GAF Corporation, Wayne, N.J.

Filed Jan. 13, 1988, Ser. No. 143,570
Int. Cl.[4] A61K 7/09
U.S. Cl. 424—70 11 Claims

1. A compound conforming to the formula:



wherein;

R is C_6 to C_{20};

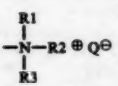
R' is the same or different than R and is from C_6 to C_{20};

EO is an ethylene oxide residue;

PO is a propylene oxide residue;

x, y, z are integers and independently are from 0 to 10;

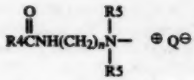
R" is selected from;



R1, R2, and R3 are each independently selected from C_1 to C_{20};

Q is a anion needed for charge balance and is selected from halide or sulfate;

or R" may be alkylamido conforming to the following structure;

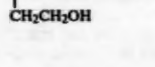


R4 is C_5 to C_{20}.

R5 is selected from methyl or ethyl,

n is an integer from 1 to 5;

Additionally R" may conform the structure;



wherein

R6 is C_6 to C_{20} and v is an integer from 1 to 5.

4,800,078

IMMUNOTHERAPEUTIC METHOD OF TREATING RESPIRATORY DISEASE BY INTRANASAL ADMINISTRATION OF IGB

Gregory Prince; Robert Chanock, both of Bethesda, and Val G. Hemming, Gaithersburg, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed May 28, 1987, Ser. No. 55,008
Int. Cl.[4] A61K *39/42, 39/395*
U.S. Cl. 424—86 1 Claim

1. A method of treating respiratory disease caused by respiratory scintial virus (RSV), consisting essentially of administering into the lower respiratory tract of a host suffering from respiratory scintial disease of the lower respiratory tract, a single dose of about 0.025 to about 0.05 g/Kg body weight of purified human gamma globulin suitable for administration by intravenous route and containing respiratory scintial virus-neutralizing antibodies at a titer greater than 1:2000 to produce therapeutic effect against disease caused by RSV.

4,800,079

MEDICINE BASED ON FENOFIBRATE, AND A METHOD OF PREPARING IT

Jean-Francois Boyer, 73 rue des Jeux de Billes, 78550 Houdan, France

Filed Aug. 10, 1987, Ser. No. 83,409
Int. Cl.[4] A61K *9/14*
U.S. Cl. 424—482 7 Claims

1. Medicine in the form of granules with controlled release of fenofibrate, each granule comprising an inert core, a layer based on fenofibrate and a protective layer, wherein the improvement comprises the layer based on fenofibrate containing the fenofibrate in the form of crystalline microparticles of dimensions not greater than 30 microns, said microparticles being included in the pores of an inert matrix soluble in water.

4,800,080

CAPILLARY COSMETIC COMPOSITION FOR WASHING DISENTANGLING HAIR CONTAINING A PLANT EXTRACT CONTAINING SAPONINS

Jean-Francois Grollier, Paris, and Bernard Beauquey, Clichy, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 679,282, Dec. 7, 1984, abandoned, which is a continuation of Ser. No. 402,801, Jul. 28, 1984, abandoned, which is a continuation of Ser. No. 144,452, Apr. 28, 1980, abandoned. This application Aug. 18, 1986, Ser. No. 896,580
Claims priority, application Luxembourg, May 15, 1979, 81256
Int. Cl.[4] A61K *7/06, 7/09, 35/78*
U.S. Cl. 424—74 2 Claims

1. A capillary cosmetic composition for use in washing or disentangling greasy hair whereby rapid re-oiling of the hair either does not occur or occurs only very slightly, said composition comprising in an appropriate cosmetic vehicle (i) between 0.5 and 20 weight percent of a dry saponaria extract containing 40–50 percent saponins and (ii) between 0.05 to 3 weight percent, based on the total weight of said composition, of a cationic polymer, said polymer being a polymer of hydroxyethyl cellulose and epichlorohydrin quaternized with trimethylamine, said composition having a pH between 4 and 8.

4,800,081

METHODS AND COMPOSITIONS FOR TREATING VIRAL INFECTIONS

Thomas Albrecht, and Chan H. Lee, both of Galveston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 601,471, Apr. 18, 1984, Pat. No. 4,663,317. This application Jun. 5, 1986, Ser. No. 871,120
Int. Cl.[4] A61K *33/00, 31/55, 31/52, 31/47*
U.S. Cl. 424—129 31 Claims

1. A method for treating viral infections in an infected host comprising administering to the host an effective amount of a calcium influx blocker in combination with an effective amount of a cyclic nucleotide modulator.

4,800,082

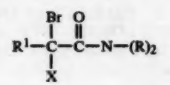
SUSTAINED RELEASE MICROBIOLOGICAL CONTROL COMPOSITION

Robert J. Karbowski, Sanford; Anita S. Erickson; Charles D. Gartner, both of Midland, all of Mich., and Kathleen A. Roy, Dunwoody, Ga., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1987, Ser. No. 29,017
Int. Cl.[4] A01N *25/08;* D21D *3/00;* C02F *1/76*
U.S. Cl. 424—409 28 Claims

1. A solid antimicrobial composition consisting essentially of:

(a) about 1 to about 90 percent by weight of a halogenated amide antimicrobial compound of the formula

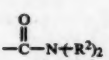


wherein

X is hydrogen, halogen of a cyano radical;

each R group is independently hydrogen, a monovalent saturated hydrocarbon radical or an inertly substituted monovalent saturated hydrocarbon radical or the two R groups are, jointly, a divalent saturated hydrocarbon radical, or an inertly substituted divalent saturated hydrocarbon radical, which, taken with the adjacent nitrogen atom, forms a heterocyclic ring having from 4 to about 10 ring members; and

R^1 is a cyano radical or an amido radical having the formula:



wherein R^2 has the same meaning as R;

(b) about 10 to about 80 percent by weight of a suitable hydrophilic polymer selected from the group consisting of a natural water soluble cellulosic polymer, a synthetic water soluble cellulosic polymer, gelatin, maltodextrin, xanthan gum, carrageenan, carboxymethyl guar, hydroxypropyl guar and carboxymethyl galactomannose;

(c) about 0 to about 80 percent by weight of a compression agent; and

(d) about 0 to about 10 percent by weight of a mold release agent.

4,800,083

SUSTAINED RELEASE METHOD AND PRODUCT

Foo S. Hom, Safety Harbor, and William R. Ebert, St. Petersburg, both of Fla., assignors to R. P. Scherer Corporation, Troy, Mich.

Filed Oct. 20, 1986, Ser. No. 921,069

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.[4] A61K *9/52, 9/68*

U.S. Cl. 424—457 49 Claims

1. A filled, gelatin capsule comprising in combination, a shell formed from gelatin, a fill material contained within said shell, said shell being sized and shaped to be readily swallowable, said fill material comprising a masticatory substance and a medicament dispersed throughout said substance, said medicament being of a type that is desirably and effectively gradually released for absorption by the body over an extended period of time, said substance defining a cohesive matrix for said medicament, said gelatin shell being rapidly dissolved in said gastrointestinal juices, said masticatory substance matrix being substantially insoluble in the presence of gastrointestinal juices, said matrix being of a type that is capable of being subjected to substantially continuous random motion while in said juices while at body temperature and while under the influence of peristaltic movement in the gastrointestinal tract for substantially varying the exposed surface area of said fill, and said medicament being gradually released over an extended period as said exposed surface area is varied for ultimate absorption of said medicament by the body.

4,800,084

PHARMACEUTICAL PRODUCT IN THE FORM OF A PELLET WITH CONTINUOUS, DELAYED MEDICAMENT SUBSTANCE EMISSION

Horst Zerbe, Wilhelm-Busch-Str. 4, D-4282 Velen, Fed. Rep. of Germany

Continuation of Ser. No. 654,245, Jan. 24, 1985, abandoned. This application Aug. 13, 1987, Ser. No. 86,178

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403329

Int. Cl.[4] A61K *9/20, 9/28*

U.S. Cl. 424—458 10 Claims

1. In a pharmaceutical product in the form of a pellet, said product allowing a continuous, delayed, essentially complete emission of a pharmaceutically active agent over a predetermined period of time upon administration to a patient in need thereof, the improvement wherein said pharmaceutical product consists essentially of:

(a) a core consisting essentially of a pharmaceutically inert material that dissolves in gastric and intestinal juices,

(b) a layer comprising said pharmaceutically active agent and surrounding said core, and

(c) an outer pharmaceutically inert coating on said pharmaceutically active agent containing layer, said outer coating conrolling and causing the continuous delayed emission of said pharmaceutically active agent upon administration and,

(d) an outer coating containing a pharmaceutically active agent unprotected against the influence of gastric and intestinal juices, and between said core of pharmaceutically inert material dissolving in the gastric and intestinal juices and said layer containing the active agent and surrounding said core, providing a pharmaceutically inert layer which is impermeable to gastric and intestinal juices and which forms a tight seal around said core.

4,800,085

SLOW-RELEASE COMPOSITE AND PROCESS FOR PRODUCING THE SAME

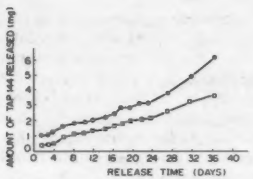
Masaru Yoshida; Masaharu Asano; Isao Kaetsu; Katsuyuki Nakai; Hidetoshi Yamanaka; Keizo Shida, all of Gunma, and Akira Shiraishi, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo; Keizo Shida, Gunma and Takeda Chemical Indus. Ltd., Osaka, all of, Japan

Division of Ser. No. 613,393, May 24, 1984, Pat. No. 4,652,443. This application Nov. 20, 1986, Ser. No. 932,874

Claims priority, application Japan, Jun. 7, 1983, 58-101319; Jun. 7, 1983, 58-101320

Int. Cl.[4] A61K *67/02;* A01N *25/26*

U.S. Cl. 424—462 3 Claims



1. A slow-release composite consisting essentially of a core of pyroglutamyl-histidyl-triptophyl-seryl-tyrosyl-D-leucyl-leucyl-arginyl-proline ethylamide or a salt thereof, as active ingredient, encapsulated in a membranous form of polyethylene fluoride, which is produced by:

compressing said active ingredient into a shaped body; and

encapsulating said shaped body with said polyethylene fluoride.

4,800,086

PREPARATION OF ASCORBIC ACID GRANULES

Volker Buehler, Wachenheim; Friedbert Hofmann, Neuhofen, and Robert Heinz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 18, 1985, Ser. No. 810,372

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447422

Int. Cl.[4] A61K *9/16*

U.S. Cl. 424—497 2 Claims

1. A process for the preparation of ascorbic acid granules which have a stable color and which can be directly tableted hich comprises: mixing crystals or crystal fragments of ascorbic acid containing less than 0.3% water, with from 0.8 to 8% by weight of soluble polyvinylpyrrolidine, having a water content of 0.3 to 5% by weight, wherein not more than 40% by weight of said ascorbic acid crystals or crystal fragments have a longest particle diameter of less than 50 μm, and not more than 15% by weight have a longest particle diameter greater than 500 μm; compressing the mixture of ascorbic acid crystals or crystal fragments and polyvinylpyrrolidone to form a strand, and comminuting the strand to form granules of ascorbic acid and polyvinylpyrrolidone.

4,800,087

TASTE-MASKED PHARMACEUTICAL COMPOSITIONS

Atul M. Mehta, 252 E. Crescent Ave., Ramsey, N.J. 07446

Filed Nov. 24, 1986, Ser. No. 933,988

Int. Cl.[4] A61K *9/50, 9/58*

U.S. Cl. 424—497 15 Claims

1. A chewable taste-masked pharmaceutical composition having controlled release characteristics, comprising:

(a) a microcapsule of about 10 microns to about 1.5 mm in diameter having a core including a pharmaceutically active agent and a polymer mixture coating having sufficient elasticity to withstand chewing;

(b) said polymeric mixture comprising

(i) at least aabout 5% by weight of a high temperature film forming copolymer comprising a rreaction porduct of poymethacrylic acid and at least one member of the group consisting of polymethyacrylic acid ester and acrylic acid ester, that forms a polymeric film at temperatures of at least about 30° C.; and

(ii) at least about 5% by weight of a low temperature film forming copolymer selected from the group consisting of methacrylic acid ester copolymers and styrene acrylate copolymers that form a polymeric film at temperatures less than about 25° C.

4,800,088

ANIMAL FEED SUPPLEMENT WITH FILLER AND METHOD OF PREPARING THE SAME

J. Wallace Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corp., Long Beach, Calif.

Filed Apr. 13, 1987, Ser. No. 37,593
Int. Cl.[4] A23K *1/02, 1/14, 1/16, 1/22*
U.S. Cl. 426—69 34 Claims

1. In a method for the preparation of an animal feed supplement wherein an aqueous solution of sugar, protein, or mixtures thereof is solidified by the addition to said solution of calcium oxide or hydroxide in an amount from 2 to 5 percent as the oxide, and phosphoric acid or a soluble phosphate in an amount from 1 to 4 percent as phosphate, and the esulting mixture is permitted to solidify, the improvement comprising:

(a) incorporating in said mixture prior to its solidification:

(1) a protein meal in an amount from 2 to 20 weight percent; and

(2) a solid filler selected from the group consisting of bran, hulls, shells and screenings of grains and nuts in an amount from 16 to about 20 weight percent; and

(b) controlling the amounts of said protein meal and filler added in steps (a)(1) and (a)(2) to a combined total from 10 to 40 weight percent and adjusting the weight proportions of said meal to filler from 0.25 to 4, to produce a solid having a 24-hour hardness from 35 to 60.

4,800,089

PACKET WITH INTERNAL FILTER FOR COFFEE MACHINES

George W. Scott, 5701 San Vincente Blvd., Los Angeles, Calif. 90019

Filed Mar. 14, 1988, Ser. No. 167,650
Int. Cl.[4] B65B *29/02;* A23F *5/46;* A47J *31/06*
U.S. Cl. 426—78 3 Claims

1. A coffee packet for use in the receptacle of a coffee brewing machine comprising:

a. a porous paper outer housing having an approximate cylindrical shape, open top, pleated walls and a flat bottom, said housing being coated on its inside surfaces with an edible, air-impervious, low melting substance;

b. a premeasured quantity of ground coffee solids contained in said housing and resting on and against said coated inside surfaces;

c. an air-impervious circular plastic cover sheet hermetically and resealably joined to said pleated walls at their uppermost periphery such that the joined cover sheet holds the pleated walls under folded tension such that the diameter of the housing is reduced and a hoop stress is created in the pleated walls, the plastic sheet serving in conjunction with the coated inside surfaces as an air tight seal for said coffee solids;

d. a tab firmly attached to the plastic sheet, said tab being capable of freeing the plastic sheet from the top of the pleated wall when pulled;

whereby the coffee brewing machine can be operated as follows:

(i) the receptacle of the machine is opened and the said coffee packet is placed inside;

(ii) the tab is pulled to separate the plastic sheet, thus unsealing the packet and causing the pleated walls, by virtue of their hoop stress, to expand against the sides of the receptacle;

(iii) the receptacle is closed and the coffee brewing machine is started.

4,800,090

INFRARED AND MICROWAVE ENERGY TREATMENT OF FOOD

Joseph R. August, Jupiter, Fla., assignor to Musser's Potato Chips, Inc., Mountville, Pa.

Filed Mar. 11, 1987, Ser. No. 24,475
Int. Cl.[4] A23L *1/025*
U.S. Cl. 426—243 17 Claims

1. A process for preparing a cooked food product without the use of oil, said process consisting essentially of:

(a) subjecting food pieces to a sufficient amount of infrared energy to warm the exterior of said food pieces;

(b) exposing said food pieces to microwave energy for a period of time sufficient to warm the interior of said food pieces; and then

(c) exposing said food pieces to a sufficient amount of infrared energy to achieve browning of said food pieces.

4,800,091

CHEWING GUM COMPOSITIONS HAVING SEQUENTIAL ACID RELEASE

Michael Glass, Fairlawn; Joseph Hoholick, Hopatcong; Amy Dombroski, Budd Lake, and Steven M. Faust, Stanhope, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 25, 1986, Ser. No. 934,752
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—3 15 Claims

1. A chewing gum composition having prolonged juiciness and flavor by virtue of the incorporation of sequentially released non-encapsulated acids, said composition comprising a uniform composition of:

(a) a gum base;

(b) a sweetener;

(c) a flavor; and

(d) a mixture of at least three non-encapsulated organic acids resulting in a sequence of acid release rates, said mixture comprising: (i) citric acid having the earliest release time, (ii) one or more acids having a transitional release time with said acids being selected from the group consisting of malic acid and tartaric acid, and (iii) one or more acids having a late release time with said acids being selected from the group consisting of adipic acid and fumaric acid.

4,800,092

METHOD FOR PRODUCING A SOLID ANIMAL FEED SUPPLEMENT

Alex E. Miller, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 828,149, Feb. 7, 1986. This application Jun. 10, 1986, Ser. No. 876,993

Int. Cl.[4] A23K *1/22*

U.S. Cl. 426—69 40 Claims

1. A method for preparing an acidic, solid, sugar-based animal feed supplement block which comprises:

(a) forming an acidic liquid mixture under conditions of agitation by mixing a first solution containing a water-soluble phosphate-containing compound but substantially no sugar, calcium or magnesium with a second solution containing a sugar source and a sufficient amount of a water-soluble source of calcium and a water-soluble source of magnesium to react with said phosphate-containing compound, said second solution having been stored in a liquid state substantially ungelled, said water-soluble source of magnesium being present in a concentration sufficient to provide above about 0.5 weight percent total magnesium in said mixture, and the weight ratio of dissolved calcium to dissolved magnesium in said mixture being between about 1.5 and 3;

(b) allowing the liquid mixture to cure into an acidic, solid, sugar-based animal feed supplement block product having a hardness less than about 80 in 0.1 millimeter penetrometer units; and

(c) recovering the product.

4,800,093

HIGH MOISTURE ANIMAL FOOD PRODUCT CONTAINING A FILAMENTOUS FUNGAL BIOMASS

William C. Hogan, Bridgeton, and Dennis O. Gierhart, High Ridge, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 829,885, Feb. 18, 1986, abandoned. This application May 28, 1987, Ser. No. 56,367

Int. Cl.[4] A23K *1/00*

U.S. Cl. 426—46 13 Claims

1. A process of producing pet food product having a moisture content greater than about 45% by weight of improved palatability comprising;

(a) forming a mixture of about 0.5 to 29% by weight meat solids on a dry basis and about 1 to 18% by weight filamentous fungal biomass solids on a dry basis, said biomas being formed by growth of a filamentous fungi selected from the genuses consisting of Aspergillus and Rhizopus on a fermentation media consisting essentially of soybean whey at a pH of about 3.8 to 5.8 and a temperature of about 28°–32° C.;

(b) reducing the particle size of said mixture into pieces of a substantially uniform size;

(c) heating said mixture to a temperature sufficient to pasteurize the mixture to form an pet food product having improved palatability.

4,800,094

METHOD FOR PROCESSING A COOKED FOOD PRODUCT

Gerald Freda, Palatine; Joseph Bogacz, Chicago; Joseph Freda, Barrington Hills, and Dennis Olson, Elgin, all of Ill., assignors to C & F Packing, Inc., Chicago, Ill.

Division of Ser. No. 763,034, Aug. 6, 1985, Pat. No. 4,731,006. This application Sep. 15, 1986, Ser. No. 906,966

Int. Cl.[4] A22C *7/00*; A23P *1/12*

U.S. Cl. 426—513 25 Claims

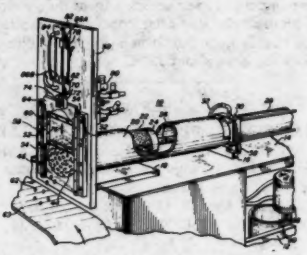
1. A method for forming, cooking and processing a meat or poultry containing food product comprising the steps of:

reducing the size of the food product by grinding, chopping, milling or comminuting said product to create a formable mass;

forming a defined product loaf from said formable mass;

cooking said product loaf through the application of heat;

positioning the cooked product loaf in an extrusion location on one side of an extrusion plate;



compressing at least a portion of said cooked product loaf to thereby extrude the cooked product loaf through said extrusion plate to form a plurality of irregularly shaped continuous lengths of cooked product; and

dividing said lengths of cooked product into a plurality of cooked product portions which have a hand-formed,randomly shaped irregular appearance and have a predetermined weight.

4,800,095

STABILIZED APM IN COMESTIBLES

Thomas J. Carroll, Oak Ridge, N.J., and Gary S. Kehoe, Ridgefield, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 840,299, Mar. 14, 1986, which is a continuation-in-part of Ser. No. 717,630, Mar. 29, 1985, abandoned. This application Mar. 3, 1988, Ser. No. 162,400

Int. Cl.[4] A23G *3/30*; A23L *1/236*

U.S. Cl. 426—548 17 Claims

1. In an ingestible sugarless product which is other than chewing gum and comprising sweetness imparting amounts of L-aspartic acid derivative sweetening agent, bulking agent amounts of non-nutritive bulk sweeteners, and ≧2% moisture the improvement comprising the inclusion of cooked aqueous hydrogenated starch hydrolysate having a moisture content of 10±6% and in amounts effective to stabilize said L-aspartic acid derivative sweetening agent against decomposition during storage of 30% relative humidity and 100°–105° F. for 40 days, whereby at least 80% of said sweetening agent is retained in said composition in undecomposed form after said storage.

4,800,096

PECTIN GELLING COMPOSITION

David J. DiGiovacchino, Hightstown; Richard A. Carlson, Freehold; Rodger H. Jonas, Cranbury, and Sheila Marion, Lakewood, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 29, 1987, Ser. No. 56,619

Int. Cl.[4] A23L *1/06*

U.S. Cl. 426—577 7 Claims

1. A dry pectin gelling composition suitable for making jelly and jams utilizing a one-step process, said gelling composition, in unfavored form, consisting essentially of at least 96% by weight sugar, from 0.1 to 0.7% food acid and from 0.5 to 2.0% pectin having a DM of from 70 to 75, wherein the pectin gelling composition is produced by combining sugar particles and pectin particles, wherein the sugar particles have an average particle size in excess of 210 microns, wherein essentially all of the pectin particles will pass through a 200 mesh U.S.

Standard Sieve and wherein said pectin particles are adhered to the surface of said sugar particles.

4,800,097

DRIED NUTMEAT AND STARCH FOOD PRODUCT AND PROCESS

Charles Morris, Brooklyn Park, and George Bateson, Roseville, both of Minn., assignors to Ogilvie Mills, Inc., Minnetonka, Minn.

Continuation of Ser. No. 678,923, Dec. 5, 1984, abandoned. This application Jul. 1, 1986, Ser. No. 881,487
Int. Cl.[4] A23L *1/36*
U.S. Cl. 426—632 19 Claims

1. A process for preparing a dried nutmeat and starch containing food product comprising:

(a) emulsifying a starch, nutmeat, and water mixture, wherein the mixture comprises from about 8 to about 65% of starch, to form a homogeneous emulsion wherein the starch is at least partially gelatinized starch and the nutmeat is comminuted, and then

(b) drying the emulsion produced in step (a) by drum drying or extrusion drying, to form a dried nutmeat and starch containing food product.

4,800,098

METHOD OF PRESERVING POTATOES

Sherry A. Galland, Caldwell, Id., assignor to J. R. Simplot, Boise, Id.

Filed Sep. 19, 1984, Ser. No. 652,109
Int. Cl.[4] A23L *1/216*
U.S. Cl. 426—637 7 Claims

1. A method of preparing frozen unpeeled whole potatoes for subsequent reheating for consumption, wherein the reheated potatoes have a taste and texture simulating whole unpeeled potatoes baked to completion from a raw state, said method comprising:

a. cooking the potatoes at a temperature between about 200° and 300° F. for a period of about 2 to 40 minutes by immersing the potatoes within a heated bath of edible oil, thereby maintaining a substantial and continuous coating of the edible oil on the entire surface of the potatoes during the cooking thereof; and

b. freezing the potatoes.

4,800,099

CANINE BISCUIT CONTAINING DISCRETE PARTICLES OF MEAT AND OTHER MATERIALS AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Summit, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 736,375, May 21, 1985, Pat. No. 4,743,461, which is a continuation of Ser. No. 549,352, Nov. 7, 1983, Pat. No. 4,546,001, which is a continuation-in-part of Ser. No. 341,969, Jan. 22, 1982, Pat. No. 4,454,163. This application Oct. 30, 1986, Ser. No. 924,930
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—641 28 Claims

1. Process for preparing dry, cohesive particles, which contain meat and/or meat by-product plus farinaceous material and/or textured vegetable protein plus seasoning or flavoring components, comprising:

(a) feeding an admixture of a portion of the meat in particulate form and/or the meat by-product in particulate form and the seasoning and/or flavoring component in particulate form into forming step (c);

(b) simultaneously feeding an admixture of the meat in particulate form and/or meat by-product in particulate form and the farinaceous material in particulate form and/or the textured vegetable protein in particulate form into forming step (c);

(c) forming a combination of admixtures (a) and (b) by mechanically working the mass at conditions of elevated temperature above about 212° F. and pressure for a time sufficient to convert the mass into a flowable substance and extruding the flowable substance through a restricted orifice;

(d) particulating the extrudate from step (c) into particles;

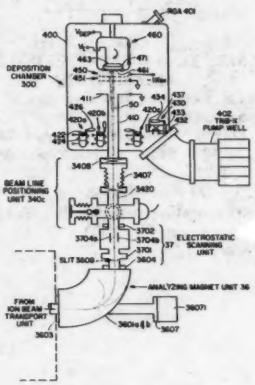
(e) drying the particles to form said dry, cohesive particles.

4,800,100

COMBINED ION AND MOLECULAR BEAM APPARATUS AND METHOD FOR DEPOSITING MATERIALS

Nicole Herbots, and Olof C. Hellman, both of Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 27, 1987, Ser. No. 113,740
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—38 49 Claims



1. Apparatus for the deposition of materials on a substrate in a chamber comprising:

(a) a high vacuum reaction chamber;

(b) beam forming means coupled to said chamber for introducing a relatively high energy beam of ions of a first species into an area adjacent said substrate;

(c) a deceleration electrode within said chamber adjacent said beam forming means for decelerating said beam of ions;

(d) a suppressor electrode within said chamber and located adjacent said substrate and having an opening therein to permit said beam of ions to impinge on said substrate;

(e) a molecular beam source within said chamber for supplying a beam of a second species for deposition on said substrate.

4,800,101

METHOD FOR RESTORING AND MAINTAINING METAL MARKERS

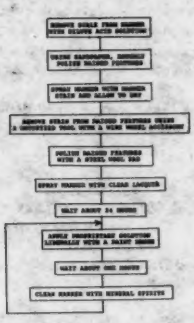
Allen R. Knauer, 11375 N. 114th Dr., Youngtown, Ariz. 85363

Filed Oct. 2, 1987, Ser. No. 88,374
Int. Cl.[4] B32B *35/00*
U.S. Cl. 427—142 15 Claims

1. A method for restoring and preserving a metal marker surface comprising the steps of:

(A) cleaning the surface; and

(B) applying to the surface a preservative including, by weight:
paraffin: 5–20%



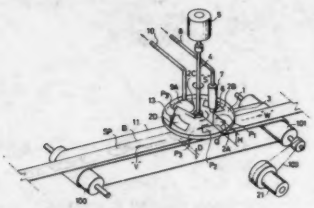
mineral spirits: 70–94%
lemon oil: 1–10%

4,800,102

POWDER SPRAYING OR SCATTERING APPARATUS AND METHOD

Koichiro Takada, Kanagawa, Japan, assignor to Nordson Corporation, Amherst, Ohio

PCT No. PCT/JP86/00609, § 371 Date Aug. 24, 1987, § 102(e) Date Aug. 24, 1987, PCT Pub. No. WO87/03226, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 28, 1986, Ser. No. 83,783
Claims priority, application Japan, Jul. 28, 1985, 60-267971
Int. Cl.[4] B05D 1/12
U.S. Cl. 427—197 8 Claims



1. A powder spraying or scattering apparatus comprising:
material supply means for spraying or scattering a solid particulate powder material;
horizontal conveyor means disposed beneath said material supply means for supporting and conveying a substrate onto which the solid particulate powder material is to be sprayed or scattered at a predetermined position;
a flat disc member rotatable about a vertical axis and disposed below said material supply means and above said conveyor means and having an opening for passing therethrough the solid particulate powder material sprayed or scattered from said material supply means and applying the solid particulate powder material to said substrate at said predetermined position and a portion for blocking the passage of the solid particulate powder material;
scraper means disposed above and closely adjacent to said flat disc member in a position remote from said material supply means, said scraper means being effective to deflect said solid particulate powder material from the surface of said disc through said opening; and
a lower solid particulate powder material receiving member disposed beneath said scraper for collecting material deflected by said scraper through said opening.

4,800,103

INORGANIC FILLERS COATED WITH LATEX

David G. Jeffs, St. Austell, England, assignor to ECC International Limited, United Kingdom

Filed Aug. 29, 1986, Ser. No. 902,158
Claims priority, application United Kingdom, Aug. 3, 1985, 8521646
Int. Cl.[4] C08K 3/34, 3/26, 9/04; B32B 19/02
U.S. Cl. 427—221 3 Claims

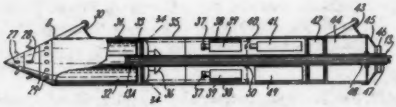
1. A process for preparing a coated inorganic filler which comprises adding to a particulate inorganic material selected from the group consisting of a kaolinitic clay, a calcined kaolinitic clay, a calcium carbonate, wollastonite, bauxite, talc, and mica, a natural or synthetic latex composition which comprises a suspension of polymer particles in water wherein the latex solids are selected from the group consisting of a natural rubber, a natural rubber which has been substituted with functional groups, a styrene butadiene rubber (SBR) and a poly(vinyl acetate), and dewatering and drying the resultant mixture, the amount of the natural or synthetic latex composition added being such as to provide from 1% to 10% by weight of latex solids based on the weight of dry inorganic material.

4,800,104

METHOD AND APPARATUS FOR THE INSPECTION OF TUBULAR MEMBERS

John S. Cruickshank, Inchture, Scotland, assignor to The L.B.P. Partnership C.P.I. Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 786,322, Oct. 10, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,323
Claims priority, application United Kingdom, Oct. 12, 1984, 8425870
Int. Cl.[4] B05D 7/22; B24C 3/00; B05C 11/00; B24B 7/00
U.S. Cl. 427—230 34 Claims



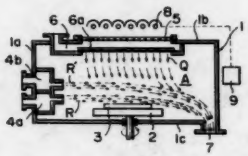
1. A method of inspecting at least one of an inner circumferential surface and an outer circumferential surface of an elongate tubular member including the steps of:
(a) moving an apparatus along said tubular member, and during movement therealong said inspection apparatus in a single operation sequentially
(b) cleaning said at least one of the inner circumferential surface and the outer circumferential surface of the elongate tubular member
(c) optically scanning simultaneously the entire 360° circumference of at least one of the inner circumferential surface and the outer circumferential surface of the elongate tubular member that was cleaned during step (b) and
(d) effecting comparison checks where at least one of ovality and wall thickness deviation are to be determined.

4,800,105

METHOD OF FORMING A THIN FILM BY CHEMICAL VAPOR DEPOSITION

Izumi Nakayama, Hiratsuka; Akitoshi Suzuki, Chigasaki; Yoshiro Kusumoto, Chigasaki; Kazuo Takakuwa, Chigasaki, and Tetsuya Ikuta, Chigasaki, all of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 17, 1987, Ser. No. 74,579
Claims priority, application Japan, Jul. 22, 1986, 61-172313; Jul. 22, 1986, 61-172314
Int. Cl.[4] C23C *16/08, 16/30*
U.S. Cl. 427—253 8 Claims



1. An improved method of forming a thin film on a substrate by chemical vapor deposition comprising the steps of feeding a first reactive gas containing metal element and a second reactive gas containing no metal element, in a laminar flow condition substantially parallel to and limited to the surface of at least one substrate disposed in a reaction chamber under reduced pressure, feeding an inert gas or a gas containing the inert gas as a main component opposite to the surface of said substrate, so as to maintain the laminar flow condition of said first and second reactive gases and radiating a light beam from at least one heating lamp to said substrate in the reaction chamber to heat the substrate and thus produce chemical reaction on the surface of said substrate, thereby forming the thin film containing the metal element on the surface of said substrate.

4,800,106

GLOSS ENHANCEMENT OF AUTODEPOSITED COATINGS

Ronald W. Broadbent, Ardsley, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jun. 19, 1987, Ser. No. 64,966
Int. Cl.[4] B05D *3/00, 3/02*
U.S. Cl. 427—388.1 16 Claims

1. A process of enhancing the gloss and maintaining the corrosion resistance of a non-glossy cured autodeposited resinous coating on a metallic surface comprising contacting an uncured autodeposited resinous coating present on a metallic surface with a reaction rinse containing from about 0.05 to about 5%/wt of an amphoteric surface active agent and from about 0.01 to about 2.5%/wt of an alkaline material, rinsing said coating with water, and then curing said coating.

4,800,107

DRY FOG SPRAYABLE LATEX PAINT

Frank A. Wickert, Olmsted Township, Hunterdon County, Ohio, assignor to The Glidden Company, Cleveland, Ohio

Filed Oct. 15, 1987, Ser. No. 108,766
Int. Cl.[4] B05D *1/02*
U.S. Cl. 427—421 3 Claims

1. A method of dry fog spraying of pigmented latex paint to a substrate at ambient temperatures, comprising

providing a pigmented latex paint having between about 30% and 70% by weight total solids, the latex paint comprising on a dry solids volume basis between 20% and 40% film-forming polymeric latex binder, between 30% and 40% non-film forming polymeric particles, between 5% and 30% opacifying pigment, and between 0% and 25% inorganic non-opacifying pigment, where the pigment-volume-content of the latex paint is between 60% and 80%, and the volume solids of the latex paint is above 40%;

dry fog spraying of said latex paint to a substrate at ambient temperatures and causing a dry fog overspray relative to the substrate the latex paint applied to the substrate adapted to coalesce into a hardened paint film at ambient temperatures, and where the dry fog overspray dries tack free as a free fall non-adherent dust or powder where 85% to 100% by weight of the dry fog overspray is easily removed from surface surrounding the painted substrate.

4,800,108

COMBINATION NAPKIN AND TABLE SETTING HOLDER

Ralph E. Swartz, 880 98th Ave. N., Naples, Fla. 33963

Filed Mar. 24, 1988, Ser. No. 172,435
Int. Cl.[4] B32B *3/08*
U.S. Cl. 428—43 2 Claims

1. A combination napkin and table setting holder made of paper comprising

a first sheet of absorbent paper in rectangular form having a single line of perforations running from the top edge to the bottom edge of the sheet parallel to the sides of the sheet which divides the sheet into a square paper napkin and a rectangular table setting holder, and

a second sheet of paper in rectangular form having the same width as the table setting holder of the first sheet and a height approximately two thirds that of the holder,

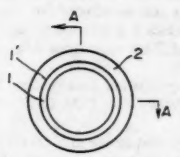
the two opposite sides and the lower edge of the second sheet of paper being bonded to the lower edge and opposite sides of the table setting holder of the first sheet to form an open-topped pocket between said sheets designed to receive an individual setting of eating utensils.

4,800,109

FLEXIBLE COMPOSITE HOSE

Katsushi Washizu, Sunto, Japan, assignor to Usui Kokusai Sangyo, Kabushiki Kaisha, Shizuoka, Prefecture Japan

Filed Feb. 2, 1987, Ser. No. 9,471
Claims priority, application Japan, Feb. 1, 1986, 61-13909[U]
Int. Cl.[4] F16L *11/00*
U.S. Cl. 428—34.9 3 Claims



1. A flexible composite hose having high oil resistance, chemical resistance and pressure resistance which consists essentially of an inner tube that consists of a synthetic polyamide and an outer external tube of heat-shrunk material which consists of a fluoroplastic or chloroprene rubber, said inner tube being compressed by the shrinkage force of said outer external tube.

4,800,110
HOT MELT GLUE BINDER

Gerard M. DuCorday, 10871 Thorley Rd., Santa Ana, Calif. 92705

Filed Jul. 6, 1987, Ser. No. 69,772
Int. Cl.[4] B42D 3/00; B42C 3/00
U.S. Cl. 428—43 23 Claims

1. A method of binding and securing a protective cover to a group of document pages comprising the steps of:

forming a binder and rear protective cover having a back cover section, a spine section, and a narrow front cover attaching flange section, said spine section being interposed between said flange section and back cover section,

defining first and second fold lines respectively between said spine section and said back cover section and between said spine section and said flange section,

securing a strip of pressure sensitive adhesive to a free edge of said narrow flange section with an inner edge of said adhesive at a distance from said second fold line,

securing a strip of temperature sensitive adhesive to said spine section,

inserting a plurality of document pages between said flange section and back cover section and abutting edges of said document pages against said temperature sensitive adhesive,

folding said back cover and flange section relative to said spine section along said first and second fold lines,

heating the spine section and the temperature sensitive adhesive secured thereto to melt the temperature sensitive adhesive and attach said document pages to the spine section,

forming a separate front protective cover of a size substantially the same as said document pages, with separate cover indicia thereon, and

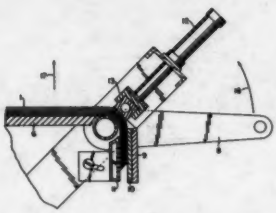
pressing an edge portion of said separately formed front protective cover against the pressure sensitive adhesive strip of said narrow front cover attaching flange section to thereby separately and independently attach said front cover to the binder and rear protective cover at a position spaced from the spine section and the temperature sensitive adhesive thereon.

4,800,111
DEFORMABLE RESIN LAMINATE SHEET

Guenther Pflug, Vienna, and Georg Petershofer, Wiener Neudorf, both of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

Division of Ser. No. 99,556, Sep. 22, 1987, Pat. No. 4,750,961, which is a division of Ser. No. 708,373, Mar. 6, 1985, Pat. No. 4,744,846, which is a continuation of Ser. No. 441,429, Nov. 15, 1982, abandoned, which is a division of Ser. No. 915,577, Jun. 15, 1978, abandoned. This application Mar. 17, 1988, Ser. No. 169,374
Claims priority, application Austria, Jun. 20, 1977, 4317/77
Int. Cl.[4] B32B 3/04; B31F 1/00; C09J 3/14; B29B 1/00
U.S. Cl. 428—121 2 Claims

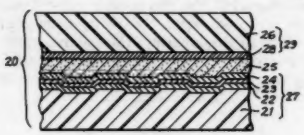
1. A product produced by the process for the heat shaping at an elevated deformation temperature of a heat shapable resin laminate sheet for producing a bent laminate having an edge zone of the sheet bent at an angle which retains its bent shape without being fixed on a support, the laminate being composed of several heat-bonded support webs impregnated with thermosetting binders and molded at an elevated temperature, the deformation temperature being higher than the temperature utilized in molding the laminate sheet, the laminate sheet having a thickness of greater than 1.2 mm and a decorative surface on at least one side and comprising a plurality of individual laminations, each of which is formed separately of one or more support webs impregnated with post-forming, thermosetting binders, and of thermoplastic binder layers arranged between the individual laminations and forming joints between them, the softening temperatures or the melting temperatures of the thermolastic binders being lower than the deformation temperature comprising (a) heating the heat shapable resin laminate sheet, the heat being applied at least over a deformation area of the sheet to a temperature higher than the softening temperature or higher than the melting temperature of the thermoplastic binder, which deformation area is formed of a bending area and the edge zone to be bent at an angle, (b) thereupon bending the sheet within the bending area in a bending device around a cylindrical surface the radius of which is less than 8 times the thickness of the sheet whereby the laminations of the sheet shift relative to each other in the deformation area in the direction of the sheet surface to produce a stepped edge at one border of the bent edge zone, (c) cooling the sheet after termination of the bending process, provided that during and/or after shaping and at least until the binder solidifies again during cooling separation of the joints formed by the binder is prevented and (d) removing the stepped edge by trimming.



4,800,112
OPTICAL RECORDING MEDIUM

Nobuhiko Kano; Akira Aoyama, and Shinobu Kunida, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,240
Claims priority, application Japan, Apr. 10, 1986, 61-83010; May 28, 1986, 61-122767
Int. Cl.[4] G11B 7/24
U.S. Cl. 428—163 18 Claims



1. A recording medium having only one magneto-optic recording layer, comprising:

a first optical transmission substrate including a first base and at least a magneto-optic recording layer disposed on a portion of the first base;

a second optical transmission substrate for cooperating with the first substrate including a second base and at least a dielectric layer disposed on the portion of the second substrate in the region overlapping the recording layer when assembled,

wherein at least one of the first optical transmission substrate and the second optical transmission substrate is transparent; and

an adhesive layer provided between the first and second

optical transmission substrates so that the bases are distal from the adhesive layer on opposite sides thereof.

4,800,113

FIBER REINFORCED THERMOPLASTIC ARTICLES AND PROCESS FOR THE PREPARATION THEREOF

James E. O'Connor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 672,762, Nov. 19, 1984, abandoned. This application Apr. 9, 1987, Ser. No. 36,622

Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—175 39 Claims

7. A fabric containing a hybrid, low-twist yarn formed from a blend of individual continuous filaments of a poly(arylene sulfide) and individual continuous filaments of a fibrous reinforcement.

4,800,114

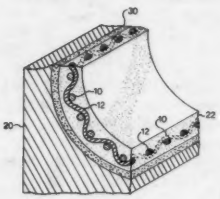
FIBER AND RESIN CONSTRUCTION

Michael F. Cichanowski, Box 247, Winona, Minn. 55987

Continuation-in-part of Ser. No. 896,833, Aug. 15, 1986, abandoned, and a continuation-in-part of Ser. No. 90,598, Aug. 28, 1987. This application Jun. 30, 1988, Ser. No. 214,059

Int. Cl.[4] B32B *1/00, 3/00*

U.S. Cl. 428—175 6 Claims



1. A panel structure of fiber and resin construction comprising: a panel of fabric arranged to exhibit a curved contour comprising a plurality of glass yarns and a plurality of yarns of organic composition aligned substantially transverse to said glass yarns and interweaved therewith; and a hardenable resinous composition arranged to encompass said yarns to yield a hardened unified stiff panel structure.

4,800,115

AGENT FOR IMPARTING ANTISTATIC CHARACTERISTICS TO A THERMOPLASTIC POLYMER AND A THERMOPLASTIC POLYMER COMPOSITION CONTAINING THE AGENT

Marvin R. Havens, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Oct. 14, 1986, Ser. No. 918,754

Int. Cl.[4] B32B *3/12, 27/08;* C08K *5/10*

U.S. Cl. 428—178 5 Claims

1. An antistatic film having one or more layers wherein at least one layer comprises a composition of a thermoplastic polymer in admixture with an antistatic agent, wherein said polymer is polyethylene and said antistatic agent is a mixture of both fatty acid ester of polyhydroxy alcohol and polyalkoxylated compound and said film will, after 88 hours abuse at 71° C. in a dry or humid oven as well as after 88 hours at 72° F. (22° C.) at 15% relative humidity, still exhibit antistatic characteristics by having a static decay time within 2000 milliseconds at low humidity less than about 15% relative humidity.

5. A multiply air cushion film having antistatic characteristics comprising at least the multilayer structure: polyethylene/-polyethylene wherein each polyethylene layer comprises polyethylene in admixture with an antistatic agent that is a mixture of both fatty acid ester of polyhydroxy alcohol and polyalkoxylated compound and said film will, after 88 hours abuse at 71° C. in a dry or humid oven as well as after 88 hours at 72° F. (22° C.) at 15% relative humidity, still exhibit antistatic characteristics by having a static decay time within 2000 milliseconds at low humidity less than about 15% relative humidity.

4,800,116

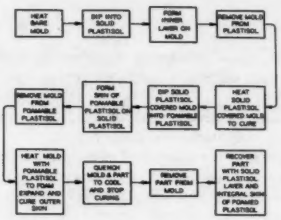
DIP MOLDING PROCESS AND ARTICLE

Joseph J. Ventimiglia, and Neville F. Vatcha, both of St. Louis, Mo., assignors to Sinclair and Rush, Inc., St. Louis, Mo.

Continuation of Ser. No. 706,152, Feb. 27, 1985, abandoned. This application Feb. 3, 1987, Ser. No. 10,207

Int. Cl.[4] B29C *67/22, 41/14, 41/22*

U.S. Cl. 428—215 9 Claims


HEAT SKIN MOLD
DIP INTO SOLID PLASTISOL
FORM INNER LAYER ON MOLD
REMOVE MOLD FROM PLASTISOL
REMOVE MOLD FROM FOAMABLE PLASTISOL
FORM SKIN OF FOAMABLE PLASTISOL ON SOLID PLASTISOL
DIP SOLID PLASTISOL COATED MOLD INTO FOAMABLE PLASTISOL
HEAT SOLID PLASTISOL COATED MOLD TO CURE
HEAT MOLD WITH FOAMABLE PLASTISOL TO FOAM EXPAND AND CURE OUTER SKIN
QUENCH MOLD & PART TO COOL AND STOP CURING
REMOVE PART FROM MOLD
RECOVER PART WITH SOLID PLASTISOL LAYER AND INTEGRAL SKIN OF FOAMED PLASTISOL

1. A hot dip molded composite foamed plastic part consisting of

(a) a fused solid plstisol body portion which does not contain a blowing agent, and having a thickness of at least 30 mils, and

(b) a fused, foamed plastisol layer of uniform composition expanded from a thickness of at least 20 mils bonded thereto and covering substantially all of said body portion, said fused, foamed plastisol layer having uniform non-blistered outer surface.

4,800,117

OVERFINISH FOR ZERO TWIST FABRIC

Robert M. Marshall, Chester, Va., assignor to Allied-Signal Inc., Morris Township, Morris Co., N.J.

Filed May 19, 1986, Ser. No. 864,350

Int. Cl.[4] B32B *7/00;* D03D *3/00*

U.S. Cl. 428—260 8 Claims

1. Synthetic multifilament yarn having deposited thereon a finishing composition comprising 0.1 to 0.5 weight percent, based on weight of the yarn, amide melamine wax formed by reacting melamine with a C_6 to C_{36} fatty acid, then reacting the resulting product with formaldehyde and heating the yarn to sufficiently crosslink said wax.

4,800,118

COMPOSITIONS AND METHODS FOR IMPARTING STAIN RESISTANCE TO TEXTILE ARTICLES

John W. Reed, and Richard D. Smith, both of Opelika, Ala., assignors to West Point Pepperell, West Point, Ga.

Filed Nov. 4, 1987, Ser. No. 117,175

Int. Cl.[4] C08G *8/14, 8/28;* D06M *15/41;* D06P *1/56, 5/12*

U.S. Cl. 428—270 50 Claims

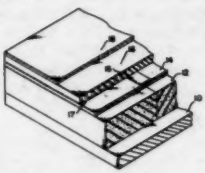
1. A light stabile composition for imparting stain resistance to polyamide fiber-containing textile articles, comprising a halogenated aryl group-containing product of the condensation polymerization of a hydroxyaryl sulfonic acid, a dihydroxydiaryl sulfone, and an aldehyde.

4,800,119

RESILIENT, WEAR-AND WEATHER-RESISTANT COMPOSITE SURFACE MATERIAL

Richard A. Kolar, Redmond, Wash., assignor to Surface Technologies, Inc., Edmonds, Wash.

Filed Apr. 28, 1986, Ser. No. 856,826
Int. Cl.[4] B32B *3/26, 27/00, 5/16, 31/00*
U.S. Cl. 428—283 21 Claims



1. A resilient, shock-attenuating weather and wear-resistant, composite surface material suitable for playground use, comprising:

a resilient shock-attenuating layer, further comprised of a closed-cell, polymeric, elastomeric foam;

a binding layer further comprised of porous fabric thermally or adhesively bound to the resilient layer; and

a weather-resistant, wear-resistant layer attached to and saturating the binding layer, wherein the weather-resistant layer resists bonding to the resilient layer, and wherein the binding layer is mechanically bound to both the shock-attenuating layer and the weather-resistant layer, thereby connecting the shock-attenuating layer to the weather-resistant layer.

4. The composite surface material of claim 1 wherein the wear- and weather-resistant layer further comprises filler material.

4,800,120

STRUCTURAL COMPONENTS MADE FROM A FIBROUS REINFORCING SUPPORT AND RUBBER AND METHODS FOR THEIR MANUFACTURE

Hans Jadamus, and Klaus-Peter Richter, both of Marl, Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 13, 1987, Ser. No. 49,336
Claims priority, application Fed. Rep. of Germany, May 13, 1986, 3615965
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—286 12 Claims

1. A structural component, comprising:

(a) a support layer, comprising a fibrous reinforcing support which comprises uncut non-metallic fibers and a matrix which comprises a polyphenylene ether or a thermoplastic resin which contains a polyphenylene ether, and

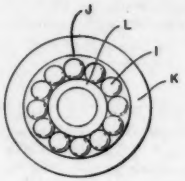
(b) a vulcanized rubber layer, wherein said structural component is produced by covulcanization of said support layer and said rubber.

4,800,121

DRAWN POLYETHYLENE FILAMENT TENSILE MEMBER

Toshihiko Ohta, Shiga; Fujio Okada, Shiga, and Masahiro Hayashi, Kyoyo, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Division of Ser. No. 885,817, Jul. 21, 1986, which is a continuation of Ser. No. 686,958, Dec. 27, 1984, abandoned. This application May 29, 1987, Ser. No. 55,355
Claims priority, application Japan, Dec. 27, 1983, 58-248498
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—364 14 Claims



1. A drawn polyethylene filament having a viscosity average molecular weight of not less than 200,000, a tenacity of not less than 20 g/d, a tensile modulus of not less than 600 g/d, and a section area of not less than 0.018 mm^2.

4,800,122

SILOXANE-BASED TINTABLE COATING

Robert A. Sallavanti, Dalton, Pa.; Jeffrey L. Dalton, Dudley, Mass., and Sharon M. Olsen, Thompson, Conn., assignors to Gentex Corporation, Carbondale, Pa.

Filed Sep. 22, 1987, Ser. No. 99,390
Int. Cl.[4] B32B *27/36*
U.S. Cl. 428—412 33 Claims

1. An abrasion-resistant coating composition comprising a first component derived by partial hydrolysis from a hydrolyzable epoxysilane, said epoxysilane being at least about 40% hydrolyzed, and a second component derived by reaction of a non-silane-based aliphatic polyamine with a carbonyl-containing compound selected from the group consisting of ketones and aldehydes.

4,800,123

IN-MOLD SCRATCH RESISTANT COATING FOR PEROXIDE CURABLE URETHANE ELASTOMERS

Rudolph H. Boeckeler, Grafton, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Filed Sep. 3, 1987, Ser. No. 92,609
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—424.2 6 Claims

1. A molded article prepared by

providing a mold having a plurality of mold surfaces;

coating at least one of said mold surfaces with a coating composition consisting essentially of a composition comprising at least one polyfunctional monomer having three of more acryloloxy groups per molecular and at least one N-vinyl imido group containing monomer and a catalyst selected from the group consisting of peroxide catalysts and photoinitiators;

curing said coating composition using heat if a peroxide catalyst is employed or ultra-violet light if a photoinitiator is employed;

injecting a peroxide curable urethane elastomer composition into said mold;

curing said peroxide curable urethane elastomer to harden same and to bond same to said coating; and

removing said coated article from said mold.

4,800,124

SILICONE ELASTOMER-FORMING COMPOSITIONS

James H. Davis, Sully, and Michael J. Dams, Cardiff, both of Wales, assignors to Dow Corning, Ltd., Barry, Wales

Filed Jun. 25, 1987, Ser. No. 66,381

Claims priority, application United Kingdom, Jul. 10, 1986, 863616857

Int. Cl.[4] B32B 9/00; C08K 3/34; C08G 77/04

U.S. Cl. 428—391 6 Claims

1. A composition curable to an elastomer and which comprises (1) a polydiorganosiloxane gum wherein at least 50 percent of the total organic substituents are methyl groups, up to 2.5 percent of the total substituents are vinyl groups and any remaining substituents are selected from phenyl and 3,3,3-trifluoropropyl groups, the gum having a Williams plasticity of at least 100 mm/100 at 25° C., (2) a reinforcing silica filler, (3) a copolymer of $R_3SiO_{0.5}$ units and SiO_2 units wherein each R represents a monovalent hydrocarbon group having less than 7 carbon atoms and the ratio of $R_3SiO_{0.5}$ units to SiO_2 units is in the range from 0.5:1 to 1.2:1, (4) mica and (5) an organic peroxide curing agent.

6. An insulated electrical conductor wherein at least a part of the insulation consists of the cured product of the composition claimed in claim 1.

4,800,125

COUPLING AGENT COMPOSITIONS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 916,260, Oct. 7, 1986, Pat. No. 4,718,944. This application Aug. 24, 1987, Ser. No. 88,917

Int. Cl.[4] B05D 3/02; B32B 9/04

U.S. Cl. 428—405 24 Claims

19. An article of manufacture formed by coating a substrate with the composition comprising

(A) the reaction product of about (i) 1.7 to 2 mole parts maleic anhydride with (ii) 1 mole part of a silane represented by the general formula

$$(RO)_{3-x}SiR''NHR'''NH_2$$

wherein R denotes an alkyl radical with 1 to 6 carbon atoms or an alkoxyalkyl radical with 2 to 8 carbon atoms, R' denotes an alkyl radical with 1 to 6 carbon atoms, R'' and R''' denote alkylene radicals with 1 to 6 carbon atoms, or alkylarylene radicals, arylalkylene radicals, or arylene radicals with 6 to 10 carbon atoms and x is 0 or 1, and

(B) sufficient solvent to solubilize A.

24. The article of claim 19 wherein said substrate is a particulate filler.

4,800,126

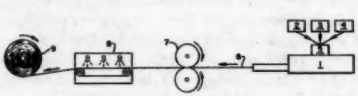
ELECTRICALLY CONDUCTIVE POLYETHYLENE FOAM

Nicholas J. Leonardi, North Andover, Mass., assignor to Dynamit Nobel of America, Inc., Rockleigh, N.J.

Division of Ser. No. 857,301, Apr. 30, 1986, Pat. No. 4,719,039, which is a continuation of Ser. No. 688,413, Jan. 2, 1985, abandoned. This application Oct. 21, 1987, Ser. No. 110,875

Int. Cl.[4] B32B 7/04; H01B 1/06

U.S. Cl. 428—420 15 Claims



1. An electrically conductive polyethylene foam sheet which comprises a sheet having a closed cell foam structure with a smooth closed cell surface and exhibiting a surface resistivity of not more than 10^5 ohms/square; said sheet having been formed by heating an extruded, foamable, non-crosslinked sheet preform containing, per 100 parts by weight of a mixture containing about 100–0% by weight of polyethylene and about 100–0% by weight of an ethylene copolymer, 2 to 15 parts by weight of a chemical blowing agent, 0.5 to 1.5 parts by weight of a crosslinking agent and 12 to 20 parts by weight of conductive carbon black, said polyethylene having a melt index of about 10–40 and the ethylene copolymer having a melt index of about 10–40.

4,800,127

THERMAL SHOCK RESISTANT SILICONE COATING COMPOSITION

William T. Saad, Burnt Hills, and George F. Medford, Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Mar. 26, 1987, Ser. No. 30,954

Int. Cl.[4] B32B 19/02, 9/04; C08K 3/34

U.S. Cl. 428—447 26 Claims

1. An article of manufacture comprising:

(a) a substrate having applied to the surface thereof

(b) a coating comprising the reaction products of a mixture of

(i) at least one silicone resin having reactive functional groups,

(ii) a thermal shock improving amount of at least one polydiorganosiloxane fluid having a viscosity between about 5 and 5,000 centipoise at 25° C. and having functional groups which will react with the reactive funtional groups of the silicone resin,

(iii) a thermal shock improving amount of ground or flaked mica, and

(iv) an effective amount of catalyst, to cure the composition.

4,800,128

CHEMICAL ATTACK-RESISTANT, LIQUID-TIGHT LINING

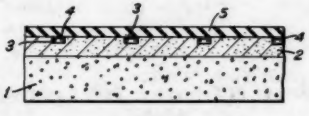
Eckhard Schacht, Montabaur; Dieter Velte, Ransbach-Baumbach; Wolfgang Werner, Montabaur-Horressen, and Albert Wolf, Heiligenroth, all of Fed. Rep. of Germany, assignors to Keramchemie GmbH, Siershahn, Fed. Rep. of Germany

Filed Jun. 4, 1987, Ser. No. 58,044

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1986, 3620976

Int. Cl.[4] B32B 9/04; B65D 90/04; E04B 5/48

U.S. Cl. 421—448 8 Claims



1. A chemical attack-resistant, liquid-tight lining for catch basins, catch reservoirs or similar containers of concrete, comprising a continuous liquid-tight impervious layer of rubber or plastic material located above the surface of concrete, the improvement which comprises a porous intermediate layer of cement or plaster between the concrete and the impervious layer, and at least one sensor cable having at least two conductors placed in the intermediate layer, the cable being placed in the intermediate layer in such a pattern that any location of the intermediate layer is not more than a preselected maximum distance away from the cable, the cable being adapted for connection with an electrical monitoring unit.

4,800,129

MULTI-LAYER PLASTIC CONTAINER

Gedeon I. Deak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 26, 1987, Ser. No. 30,425
Int. Cl.[4] B32B *27/08, 27/34*
U.S. Cl. 428—474.4 9 Claims

1. A thermoformed multi-layer structure comprising at least a first and second layer, said first layer comprising a blend of 70–85% of an amorphous polyamide having a Tg greater than about 120° C. which is a hexamethylenediamine iso/terephthalamide with a ratio of iso- to tere- phthalamide in the range of about 60/40 to 100/0, with 15–30% of one or more semi-crystalline aliphatic polyamides and said second layer comprising one or more structural thermoplastic resins.

4,800,130

LAMINATE EXCELLENT IN SURFACE GLOSS AND SURFACE HARDNESS, AND PREPARATION PROCESS AND USE THEREOF

Katsuyoshi Yonekura; Akira Uchiyama, and Akira Matsuda, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Ichihara, Japan

Division of Ser. No. 680,644, Dec. 11, 1984, Pat. No. 4,656,098. This application Jan. 15, 1987, Ser. No. 3,713
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—517 4 Claims

1. A molded article formed of a laminate excellent in surface gloss and scratch resistance, which comprises a thermoplastic elastomer layer composed mainly of a composition comprising a polyolefin and an olefinic copolymer elastomer, at least one of which is partially crosslinked, and a layer of a partially neutralized ionomer resin or 1-olefin/(meth)a-crylate, acid copolymer resin having free carboxyl groups, both the layers being tightly bonded to each other and wherein up to 60% of the carboxyl groups of the partially neutralized ionomer resin are bonded to an alkali metal ion and/or an ion of a metal of the Group II of the Periodic Table.

4,800,131

CORED WIRE FILLER METALS AND A METHOD FOR THEIR MANUFACTURE

Claire B. Marshall, York; Frank B. Lake, Brodbecks, and Roger A. Bushey, Littlestown, all of Pa., assignors to Alloy Rods Global, Inc., Hanover, Pa.

Filed Dec. 20, 1984, Ser. No. 683,844
Int. Cl.[4] B22F *7/08*
U.S. Cl. 428—558 19 Claims

1. A method of making a cored wire filler metal comprising the steps of providing a core wire having a chemistry and then deforming a metal strip of a width having a different chemistry into a sheath enclosing the core wire, the sheath having a circumference of less than about 78% of the width of the metal strip.

4,800,132

MECHANICAL PLATING WITH OXIDATION-PRONE METALS

John J. Grunwald, Ramat Gan; Igal Klein, Karmiel, both of Israel, and Bryan Whitmore, New Haven, Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Division of Ser. No. 921,961, Oct. 22, 1986. This application Sep. 23, 1987, Ser. No. 100,030
Int. Cl.[4] B22F *3/02;* B32B *15/16;* C23C *20/00*
U.S. Cl. 428—560 18 Claims

1. A mechanically plated article comprising:
a metal substrate and
a coating on said metal substrate which comprises adherent particles of aluminum and an immersion metal compound which coats the particles of the aluminum to minimize corrosion of the aluminum.

4,800,133

ALUMINUM ALLOY FOIL FOR CATHODE OF ELECTROLYTIC CAPACITORS

Kozo Arai; Takao Suzuki, and Syozo Umetsu, all of Osaka, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Continuation of Ser. No. 733,402, May 13, 1985, abandoned, which is a continuation of Ser. No. 305,855, Sep. 25, 1981, abandoned. This application Apr. 6, 1987, Ser. No. 35,246
Claims priority, application Japan, Sep. 30, 1980, 55-137367; Sep. 30, 1980, 55-137368
Int. Cl.[4] H01G *9/24*
U.S. Cl. 428—606 10 Claims

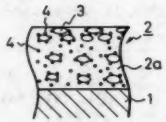
1. A cathod foil for an electrolytic capacitor which comprises an aluminum alloy foil having a capacitance of at least about 255 $\mu F/cm^2$ and produced by continuously casting an aluminum alloy in the form of a plate having a thickness of 25 mm or less using a twin roll continuous casting system, cold rolling and foil-forming rolling the plate into a foil, and acid-etching the foil, said aluminum alloy consisting essentially of aluminum having a purity of at least 99.7% and 0.03 to 0.5% copper.

4,800,134

HIGH CORROSION RESISTANT PLATED COMPOSITE STEEL STRIP

Teruaki Izaki; Makoto Yoshida; Masami Osawa; Seijun Higuchi, and Akinori Maruta, all c/o Nippon Steel Corporation Yawata Works, 1-1-1, Edamitsu, Yahatahigashi-ku, Kitakyushu-shi, Fukuoka, Japan

Filed Dec. 22, 1987, Ser. No. 136,842
Claims priority, application Japan, Apr. 13, 1987, 62-88693; May 9, 1987, 62-111684; Jun. 24, 1987, 62-155597; Jun. 24, 1987, 62-155598; Jun. 30, 1987, 62-161304
Int. Cl.[4] B32B *15/18*
U.S. Cl. 428—626 12 Claims



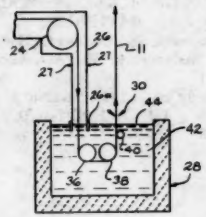
1. A high corrosion resistant plated composite steel strip comprising:
(A) a substrate consisting of a steel strip; and
(B) a corrosion resistant coating layer formed on a least one surface of the steel strip substrate and comprising a base electroplating layer which comprises (a) a matrix consisting of a member selected from the group consisting of zinc and zinc alloys; and (b) a number of dispersoid particles evenly distributed in the matrix and consisting of a mixture of (i) at least one type of substantially water-insoluble chromate fine particles, and (ii) at least one type of additional fine or colloidal particles consisting of a member selected from the group consisting of SiO_2, TiO_2, Cr_2O_3, Al_2O_3, ZrO_2, SnO_2 and Sb_2O_5.

4,800,135

HOT DIP ALUMINUM COATED CHROMIUM ALLOY STEEL

Farrell M. Kilbane, Centerville; Richard A. Coleman, Middletown; Frank C. Dunbar, West Chester, and Alan F. Gibson, Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Division of Ser. No. 865,238, May 20, 1986, Pat. No. 4,675,214. This application Feb. 20, 1987, Ser. No. 16,920
Int. Cl.[4] B32B *15/18*
U.S. Cl. 428—653 4 Claims



1. A ferrous base ferritic strip continuously hot dip coated with a coating metal; comprising: the strip including at least about 6% by weight chromium, the coating metal consisting essentially of aluminum, the coating layer on said strip being substantially free of uncoated areas and formed without a thick brittle Fe-Al alloy inner layer,

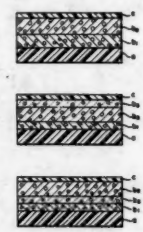
said coating layer being tightly adherent to said strip and resistant to crazing or flaking during bending.

4,800,136

RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa; Junji Miyahara, and Kenji Takahashi, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 803,772, Nov. 28, 1985, abandoned, which is a continuation of Ser. No. 586,707, Mar. 6, 1984, abandoned. This application May 13, 1987, Ser. No. 49,024
Claims priority, application Japan, Mar. 7, 1983, 58-37837
Int. Cl.[4] G03C *5/16*
U.S. Cl. 428—690 9 Claims



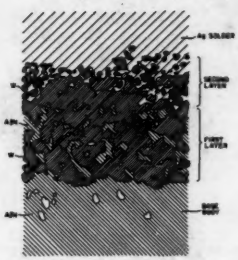
1. A radiation image storage panel comprising a support and phosphor layers provided thereon, each of said phosphor layers comprising a binder and a stimulable phosphor dispersed therein, wherein said phosphor layers comprise a first phosphor layer provided on the support and a second phosphor layer provided on the side nearer to the front surface of the panel than said first phosphor layer, and the mixing ratio of the binder to the stimulable phosphor in the first phosphor layer is larger than the mixing ratio of the binder to the stimulable phosphor in the second phosphor layer.

4,800,137

COMPOSITE LAYER ALUMINUM NITRIDE BASE SINTERED BODY

Akiyasu Okuno, Kani; Masakazu Watanabe, Nagoya, and Kazuhiko Ikoma, Komaki, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Division of Ser. No. 869,792, Jun. 2, 1986, Pat. No. 4,695,517. This application May 18, 1987, Ser. No. 50,388
Claims priority, application Japan, May 13, 1985, 60-119174; Jun. 13, 1985, 60-129023; Jun. 17, 1985, 60-131570
Int. Cl.[4] B32B *31/26*; C04B *35/58*; F27D *7/06*
U.S. Cl. 428—698 16 Claims



1. A process for producing a composite layer AlN-base sintered body which comprises following steps:

(a) providing an AlN-base material body

(b) forming a first layer on at least one surface of said material body,

said first layer consisting essentially of 100 parts by weight of at least one first component selected from the group consisting of W, Mo, borides thereof and carbides thereof, and

0.1–50 parts by weight of a second component consisting essentially of AlN,

(c) forming a second layer on said first layer to form a laminated body,

said second layer consisting essentially of at least one component selected from the group consisting of W, Mo, borides thereof and carbides thereof, and

(d) sintering said laminated body under such temperature and condition that AlN is sintered until the density of an AlN-base sintered body reaches at least 90% of the theoretical density.

4,800,138

SEPARATION OF GASEOUS HYDROGEN FROM A WATER-HYDROGEN MIXTURE IN A FUEL CELL POWER SYSTEM OPERATING IN A WEIGHTLESS ENVIRONMENT

William E. Romanowski, Rockville, and George T. Suljak, Vernon, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

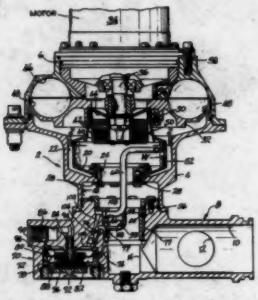
Filed Apr. 16, 1987, Ser. No. 39,038
Int. Cl.[4] H01M *8/18*; B04B *1/00, 11/00*
U.S. Cl. 429—19 3 Claims

1. For use in conjunction with a fuel cell power system which operates in a weightless environment, an assembly for separating product water and hydrogen from fuel cell exhaust gases, and for pumping the separated hydrogen back to the fuel cell power system, and removing and storing the separated water, said assembly comprising:

(a) a rotationally driven sump having a side well against which product water is centrifugally layered;

(b) passage means for delivering a mixture of condensed water droplets entrained in hydrogen gas from the fuel cell power system exhaust to said sump;

(c) a hydrogen pump for pumping dewatered hydrogen from the sump back to the fuel cell power system;
(d) means interposed between said sump and said hydrogen pump for separating the water droplets from the hydrogen gas, said means for separating allowing hydrogen to flow to said hydrogen pump but blocking water droplets from leaving said sump;
(e) means in said sump adjacent said means for separating operable to transfer water droplets from said means for separating to said sump side well;
(f) a water discharge valve in said assembly and having a chamber operable to store product water and having valve means operable to periodically release the stored product water from said assembly;



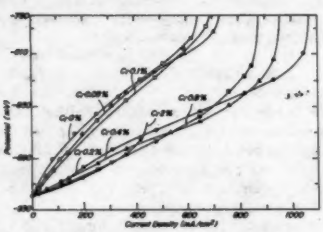
(g) first tube means operable to pick up water from adjacent said sump side well and deliver the water to said water valve chamber;
(h) second tube means operable to return water from said water valve chamber to said sump;
(i) first means operable to separate entrained gaseous hydrogen from the water in said first tube means in a weightless environment; and
(j) second means in said first tube means operable to bleed the separated gaseous hydrogen from said first tube means in the weightless environment whereby water entering said water discharge valve chamber is substantially free from entrained gaseous hydrogen.

4,800,139

METHOD OF PRODUCING HYDROGEN ELECTRODE AND USE THEREOF IN FUEL CELLS

Tadao Kenjyo, Noboribetsu, Japan, assignor to Muroran Institute of Technology, Muroran, Japan

Division of Ser. No. 800,415, Nov. 21, 1985, abandoned. This application Sep. 28, 1987, Ser. No. 105,953
Int. Cl.[4] H01M *4/86, 4/88*
U.S. Cl. 429—42 **12 Claims**



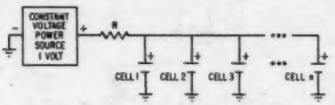
1. A method of producing a hydrogen electrode comprising a Raney nickel catalyst containing from about 0.2 to 2% by weight of chromium for use in an alkaline hydrogen-oxygen fuel cell, the method comprising mixing and kneading a powder of the Raney nickel catalyst, which Raney nickel catalyst would be subject to ignition if dry, and a suspension of polytetrafluoroethylene in a suspension medium to form a mixture, while drying the mixture at the same time at a temperature effective to remove the suspension medium, whereby the surface of the Raney nickel catalyst is stabilized and spontaneous ignition of the Raney nickel catalyst is prevented.

4,800,140

APPARATUS AND METHOD FOR PREVENTING DEGRADATION OF NICKEL HYDROGEN CELLS AND BATTERIES

Albert H. Zimmerman, and Charles C. Badcock, both of Torrance, Calif., assignors to The Aerospace Corporation, El Segundo, Calif.

Filed Oct. 2, 1987, Ser. No. 103,856
Int. Cl.[4] H01M *6/50*
U.S. Cl. 429—48 **1 Claim**



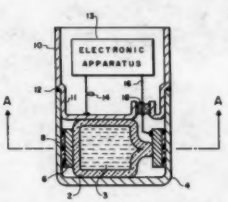
1. A method for preventing degradation of one or more nickel hydrogen cells, which comprises the steps of:
(a) continuously applying a controlled voltage of between 0.5 to 1.1 volts to a circuit from a controlled voltage means; and
(b) limiting a flow of current from the controlled voltage means to the nickel hydrogen cells.

4,800,141

RESERVE ACTIVATED ELECTROCHEMICAL CELL

William J. Eppley, Skippack, Pa., and Warren E. Hawkins, Brooklyn Park, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 17, 1987, Ser. No. 122,105
Int. Cl.[4] H01M *6/30*
U.S. Cl. 429—116 **6 Claims**



1. A reserve activated electrochemical cell comprising
a frangible electrolyte storage means,
a first means comprising a cylindrical metal cup-shaped shell,
a pair of cell electrodes located within said first means and
a second means comprising a cylindrical metal cup-shaped shell forming a contiguous extension of said first means and attached with a weld bead forming a fluid-tight seal joining said shells of said first and second means while providing separate electrical connections to the first and second electrodes wherein an electrical conductive coating on an inside surface of said shell of said first means constitutes a first one of said electrodes and where a sec-

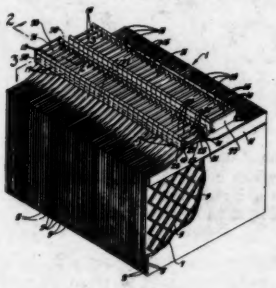
ond one of said electrodes comprises an electrically conductive ring electrically isolated from said shell of said first means.

4,800,142

ELECTRIC STORAGE BATTERY

James R. Bish, Anderson; Charles P. McCartney, Jr., Yorktown, and Clarence A. Meadows, Muncie, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 859,364, May 5, 1986, Pat. No. 4,683,180. This application Jul. 13, 1987, Ser. No. 72,729
The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.
Int. Cl.[4] H01M 2/28
U.S. Cl. 429—130 **2 Claims**



1. An electric storage battery comprising: a container having a plurality of walls defining at least one cell compartment; a galvanic cell housed within said compartment, said cell comprising a stack of first polarity plates alternately interleaved with plates of the opposite polarity; an aperture in at least one of said walls; a lug projecting from each of said first polarity plates through said aperture and aligned with similar lugs projecting from the other first plates of said stack for electrically joining said first polarity plates to a terminal of said battery; a discrete, insulating collar tightly surrounding each said lug where it passes through said aperture, said collar abutting similar collars on said aligned lugs of said other plates and together therewith space said aligned lugs apart and substantially plug said aperture.

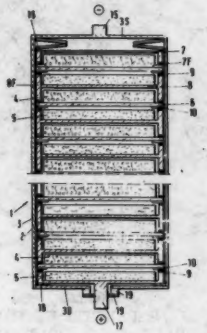
4,800,143

HIGH-TEMPERATURE STORAGE BATTERY

Friedrich Harbach, Heidelberg; Reinhard Knödler, Nussloch; Rudolf Krapf; Stefan Mennicke, both of Leimen, and Ludwig Weiler, Heidelberg, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri Aktiengesellschaft, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,738
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1986, 3640749
Int. Cl.[4] H01M 6/46, 2/08
U.S. Cl. 429—153 **10 Claims**

1. High-temperature storage battery, comprising a housing; a stack of storage cells disposed in said housing; each of said storage cells having flat components loosely disposed on top of one another in said stack; said components including an anode reactant chamber and a cathode reactant chamber, a planar ion-conducting solid electrolyte mutually separating said anode and cathode reactant chambers, and planar components each being in the form of a plate having flanges each extending to one of said solid electrolytes, said planar components serving as electrodes and bordering said anode chamber and said cathode chamber of two adjacent storage cells toward the outside; and at least one common resilient structural element



pressing said components of all of said storage cells together in a leakproof manner.

4,800,144

LAMINATED TYPE PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY COMPRISING A SUBSTRATE OF ALUMITE

Hideaki Ueda, Kawanishi; Shizno Yuge, Toyokawa, and Katsutoshi Konishi, Toyono, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 3, 1987, Ser. No. 116,170
Claims priority, application Japan, Nov. 4, 1986, 61-263488; Nov. 4, 1986, 61-263489; Nov. 4, 1986, 61-263490; Nov. 4, 1986, 61-263491; Nov. 4, 1986, 61-263492; Nov. 4, 1986, 61-263493
Int. Cl.[4] G03G 5/10
U.S. Cl. 430—58 **4 Claims**

1. A photosensitive member having at least a charge generating layer and a charge transporting layer on an aluminum substrate, wherein the charge generating layer is an organic pigment-dispersed resin layer, the aluminium substrate comprises an alumite layer, and the alumite layer has impedance of 1~200 KΩ and molar ratio of amorphous aluminum oxide to crystalline aluminum oxide of 50~1500.

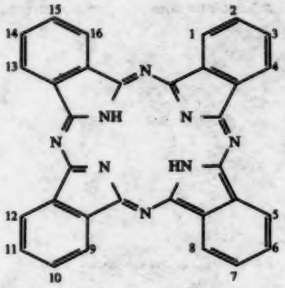
4,800,145

SUBSTITUTED PHTHALOAYANINE PHOTOCONDUCTOR AND CHARGE TRANSPORT PHASE

Anthony J. Nelson, Stockport, and Peter J. Duggan, Rochdale, both of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Jul. 14, 1987, Ser. No. 73,193
Claims priority, application United Kingdom, Aug. 6, 1986, 8619238
Int. Cl.[4] G03G 5/06, 5/14
U.S. Cl. 430—58 **10 Claims**

1. An organic photoconductor comprising an electrically conducting support, a charge generating phase comprising a charge generator and a charge transport phase characterized in that the charge generator is a phthalocyanine compound in which each of at least four of the peripheral carbon atoms numbered from 1 to 16 in the phthalocyanine nucleus shown below is linked, by an atom selected from the group consisting of oxygen, sulphur, selenium, tellurium, and nitrogen or a mixture thereof, to a carbon atom of an organic radical



I

4,800,146

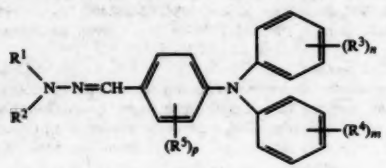
TRANSPARENT ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING SPECIFIC HYDRAZONE AND BENZIDINE COMPOUNDS AS PHOTOCONDUCTORS

Hiroaki Yokoya; Kenji Sano; Hiromichi Tachikawa, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

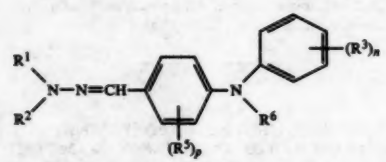
Filed Nov. 12, 1986, Ser. No. 929,315
Claims priority, application Japan, Nov. 11, 1985, 60-252516
Int. Cl.[4] G03G 5/06
U.S. Cl. 430—73 13 Claims

1. An electrophotographic photoreceptor comprising a conductive support having provided thereon a photosensitive layer containing

at least one hydrazone compound represented by formula (I) or (II)



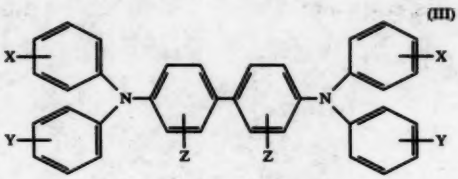
(I)



(II)

wherein R^1 and R^2 each represents an alkyl group selected from the group consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, an octyl group, a nonyl group, a dodecyl group, an isopropyl group, an isobutyl group, an isopentyl group, a 4-methyl-pentyl group, a sec-butyl group and a t-butyl group, or an aralkyl group selected from the group consisting of a benzyl group, a phenethyl group, a 1- and 2-naphthylmethyl groups, a 1-anthrylmethyl group and a benzhydryl group, or a substituted or unsubstituted aryl group selected from the group consisting of phenyl group, a 1- and 2-naphthyl groups, an anthryl group, a pyrenyl group, an scenaphthenyl group and a fluorenyl group; R^3, R^4, and R^5 each represents a hydrogen atom, a substituted or unsubstituted, straight or branched chain alkyl group having from 1 to 12 carbon atoms, a substituted or unsubstituted, straight or branched chain aralkyl group having from 7 to 20 carbon atoms, a straight or branched chain alkoxy group having from 1 to 4 carbon atoms, an aryloxy group, an acyl group, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a halogen atom, a nitro group, a monoalkylamino group having from 1 to 4 carbon atoms in the alkyl group, a dialkylamino group having from 1 to 4 carbon atoms in each alkyl group, or an amido group; R^6 represent a substituted or unsubstituted, straight or branched chain alkoxy group having from 1 to 12 carbon atoms or a substituted or unsubstituted, straight or branched chain aralkyl group having from 1 to 12 carbon atoms; and n, m, and p each represents 1 or 2, and

at least one benzidine compound represented by formula (III)



(III)

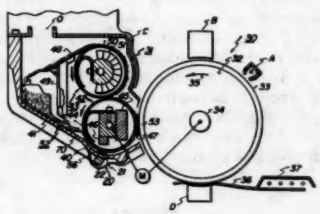
wherein X and Y each represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or a halogen atom; and Z represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms.

4,800,147

XEROGRAPHIC PROCESS WITHOUT CONVENTIONAL CLEANER

Edward C. Savage, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1987, Ser. No. 81,080
Int. Cl.[4] G03G 21/00, 15/06, 15/00, 13/00
U.S. Cl. 430—125 1 Claim



1. A non-synchronous electrophotographic imaging process comprising forming a first electrostatic latent image on an imaging surface of a photoconductive layer, developing said first electrostatic latent image with a conductive two-component developer having a conductivity between about 10^{-10} ohms-cm^{-1} and about 10^{-14} ohms-cm^{-1} in a development zone between said imaging surface and an electrically conductive developer applicator to form a toner image corresponding to said first electrostatic latent image, transferring most of said toner image to a receiving member with a residual toner image remaining on said imaging surface, forming a second electrostatic latent image on said imaging surface bearing said residual toner image, and simultaneouly developing said second electrostatic latent image and removing said residual toner image by contacting said imaging surface in said development zone with conductive two-component developer while simultaneously maintaining the minimum distance between the photoconductive layer and said electrically conductive developer applicator in said development zone between about 0.025 inches and about 0.065 inches, charging said photoconductive

layer between 350 volts and 450 volts, and supplying an electrical bias to said conductive developer applicator between 30 volts and 350 volts.

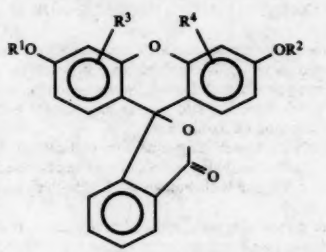
4,800,148

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Toru Harada, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1987, Ser. No. 59,989
Claims priority, application Japan, Jun. 9, 1986, 61-133091
Int. Cl.[4] G03C 5/54, 1/68
U.S. Cl. 430—138 6 Claims

1. A light-sensitive material comprising a light-sensitive layer containing silver halide, a reducing agent, an ethylenic unsaturated polymerizable compound and a leuco dye provided on a support, wherein the leuco dye is a compound having the following formula (II):



(II)

in which R^1 and R^2 are the same groups selected from the group consisting of an alkyl group and a cycloalkyl group; R^3 and R^4 are the same groups selected from the group consisting of an alkyl group, a cycloalkyl group and an alkoxy group; and the sum of carbon atoms contained in the groups of R^1 and R^3 is not less than 5.

3. The light-sensitive material as claimed in claim 1, wherein the polymerizable compound and the leuco dye are contained in microcapsules which are dispersed in the light-sensitive layer, said leuco dye being dissolved in the polymerizable compound.

4,800,149

PHOTOHARDENABLE COMPOSITIONS CONTAINING A DYE BORATE COMPLEX AND PHOTOSENSITIVE MATERIALS EMPLOYING THE SAME

Peter Gottschalk, Centerville, Ohio, and Gary B. Schuster, Champaign, Ill., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 917,873, Oct. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 800,014, Nov. 20, 1985, abandoned. This application Feb. 16, 1988, Ser. No. 156,254
Int. Cl.[4] G03C 1/72, 1/00
U.S. Cl. 430—138 12 Claims

1. A photosensitive material comprising a support having a layer of microcapsules on one surface thereof, at least a portion of said microcapsules having an imageforming agent associated therewith and containing an internal phase including a photohardenable composition, said composition comprising a free radical addition polymerizable or crosslinkable compound and a cationic dye-borate anion complex, said complex being capable of absorbing actinic radiation and producing free radicals which initiate free radical polymerization or crosslinking of said compound.

4,800,150

SUPER-HIGH CONTRAST NEGATIVE TYPE PHOTOGRAPHIC MATERIAL

Kazunobu Katoh, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,699
Claims priority, application Japan, Apr. 3, 1986, 61-77323
Int. Cl.[4] G03C 1/33
U.S. Cl. 430—264 23 Claims

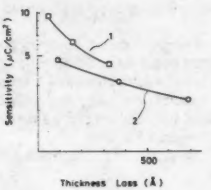
1. A super-high contrast negative type silver halide photographic material comprising a support having provided thereon at least one silver halide emulsion layer, said emulsion layer or layers or other hydrophilic colloidal layer or layers containing a hydrazine derivative, wherein said photographic material further contains (a) an acidic polymer incorporating not less than 20 mol% of a monomer unit containing an acid group and a crosslinkable monomer unit containing at least two copolymerizable ethylenically unsaturated groups, (b) a hydrophobic polymer incorporating not more than 20 mol% of a monomer unit containing an acid group and having a glass transition temperature of not more than 50° C.

4,800,151

RADIATION-SENSITIVE POSITIVE RESIST COMPRISING A FLUORINE-CONTAINING ALPHA-CHLOROACETATE COPOLYMER IN THE SPECIFICATION

Mutsuo Kataoka, and Atuto Tokunaga, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 20, 1987, Ser. No. 28,428
Claims priority, application Japan, Mar. 26, 1986, 61-65898
Int. Cl.[4] G03C 5/24, 1/495
U.S. Cl. 430—270 15 Claims



1. A radiation-sensitive positive resist comprising a copolymer obtained by copolymerizing 2,2,2-trifluoroethyl α-chloroacrylate with 2,2,3,3-tetrafluoropropyl α-chloroacrylate at a weight ratio of between 90:10 and 50:50.

4,800,152

NEGATIVE RESIST COMPOSITIONS

Robert D. Allen, San Jose, Calif.; Jean M. J. Frechet, Ottawa, Canada; Robert J. Twieg, and Carlton G. Willson, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1987, Ser. No. 26,425
Int. Cl.[4] G03C 1/71
U.S. Cl. 430—270 2 Claims

1. A heat stable negative resist composition comprising an onion salt photoinitiator, poly(vinylbenzyl acetate) and bisphenol-A.

2. A heat stable negative resist composition comprising an acid generating onium salt, trisacetoxy mesitylene and a polymer which contains multiple activated aromatic rings, said polymer being chosen so that following irradiation it reacts with said triacetoxy mesitylene to form crosslinking and also to generate acid.

4,800,153

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS AND A COLOR PHOTOGRAPHIC DEVELOPER COMPOSITION COMPRISING HYDROXYLAMINE AND STABILIZER

Kiyoshi Morimoto, and Takatoshi Ishikawa, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 17, 1987, Ser. No. 74,983
Claims priority, application Japan, Jul. 18, 1986, 61-168159
Int. Cl.[4] G03C 7/30
U.S. Cl. 430—380 30 Claims

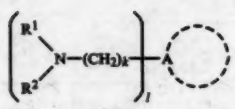
1. A method for processing a silver halide color photographic material having a color coupler associated therewith, which comprises processing the silver halide color photographic material which has been imagewise exposed to light with a color developer containing

(i) an aromatic primary amine color developing agent,

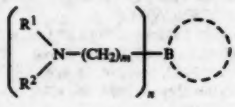
(ii) a compound represented by formula (I-1) or (I-2), and

(iii) a hydroxylamine compound represented by formula (II):

Formula (I-1)



Formula (I-2)



wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, or a substituted or unsubstituted alkyl group, aryl group or heterocyclic group;

A and B are an organic group composed of atoms selected from the group consisting of carbon, oxygen, nitrogen and sulfur atoms, and each represents a saturated and unsaturated 5- to 6-membered ring, respectively, and each may contain a fused benzene ring or a fused heterocyclic ring;

k and m are integers of 1 to 6,

l and n are integers of 1 to 3, provided that m+n is 3 or greater; and

Formula (II)

wherein R^3 and R^4, which may be the same or different, each represents a substituted or an unsubstituted alkyl group or alkenyl group.

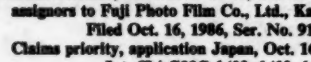
4,800,154

SILVER HALIDE PHOTOGRAPHIC EMULSION

Masaki Okazaki, and Haruo Takei, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1986, Ser. No. 919,418
Claims priority, application Japan, Oct. 16, 1985, 60-230826
Int. Cl.[4] G03C 1/08, 1/19, 1/24
U.S. Cl. 430—570 6 Claims

1. A silver halide photographic emulsion comprising at least one compound represented by the following general formula (I):



Dye—J^1—CONH—J^2—NHNHG—R (I)

wherein Dye represents a dye residue capable of becoming a spectral sensitizing dye; J^1 represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted arylene group, a substituted or unsubstituted aralkylene group, or a substituted or unsubstituted alkarylene group; J^2 represents a substituted or unsubstituted arylene group; R represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, or a substituted or unsubstituted aryloxy group; and G represents a carbonyl group, a sulfonyl group, a sulfoxy group, a phosphoryl group, or a substituted or unsubstituted iminomethylene group.

4,800,155

HUMAN MONOCLONAL ANTIBODY TO LUNG CARCINOMA AND HYBRIDOMA PRODUCING THE SAME

Masaru Taniguchi, 17-12, Konakadai 3-chome, Chiba-shi, Chiba; Hiroaki Saito, Chiba; Yutaka Yamaguchi, Chiba; Fumio Hiraoka, Chiba, and Ikuro Nakamura, Tokyo, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka and Masaru Taniguchi, Chiba, both of, Japan

Filed Feb. 9, 1987, Ser. No. 12,459
Claims priority, application Japan, Feb. 7, 1986, 61-26544; Mar. 10, 1986, 61-52264
Int. Cl.[4] G01N 33/53, 33/577; C12N 5/00; C07K 15/14
U.S. Cl. 435—7 5 Claims

1. A human monoclonal antibody produced by a human-mouse hybridoma which is obtained by cell fusion of lymph node cells from patients with human squamous lung carcinoma and mouse myeloma cells, said human monoclonal antibody having the following characteristcs:

(1) It reacts with human lung squamous cell carcinoma cell line PC10 and humal lung adenocarcinoma cell line PC 14 but does not react with human adult skin-derived fibroblast cells;

(2) Among tumor slice specimens of tumor tissue removed by operation on a lung cancer patient, it reacts with tissue from lung squamous cell carcinoma, lung adenocarcinoma and lung large cell carcinoma but does not react with tissue from lung small cell cancer and other mediastinal tumors;

(3) It does not react with normal tissues except for trachea gland cells, bronchi gland cells, and kidney renal tubular cells and its does not react with benign tumors;

(4) It reacts with nonpulmonary tumor tissues derived from thyroid cancer, breast cancer, esophagus cancer, stomach cancer and extra hepatic bile duct cancer;

(5) It recognizes an antigen molecule having a molecular weight of about 200Kd as determined by the SDS-PAGE method and found in the soluble fraction on the surface of the cellular membrane of PC10 cells which is divided into components having molecular weights of about 65Kd as determined by the SDS-PAGE method under reducing conditions;

(6) The class of the antibody is IgM and the light chain is lambda.

4,800,156

ANAEROBIC GERMICULTURE RECEPTACLE

Sadayuki Yuhda, Kawanishi, Japan, assignor to Sankin Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 854,611, Apr. 22, 1986, abandoned. This application Jul. 2, 1987, Ser. No. 69,191
Claims priority, application Japan, Apr. 25, 1985, 60-89698
Int. Cl.[4] C12M 1/24
U.S. Cl. 435—296 2 Claims

1. An anaerobic germiculture receptacle comprising:

a first cylindrical receptacle having one open end; a second cylindrical receptacle adapted to be accommodated in the first receptacle, the second receptacle having one open end;

a sealing plug for closing the open end of the first receptacle, the plug including a bore produced axially thereof and

having a size enough to allow the passage of the second receptacle;

a pushing rod insertable in the bore; wherein the open end of the first receptacle is defined by a flat rim, said flat rim being provided with an annular bead projecting from said flat rim for sealing by said sealing plug; and

a lid including an aperture produced coaxially of the bore of the sealing plug, the lid being adapted to cover the sealing plug airtightly;

wherein the sealing plug includes a flat shoulder complimental with the rim of the first receptacle, the sealing plug includes a ring-shaped groove, and the lid includes a cylindrical inner wall fitted in the ring-shaped groove of the sealing plug; and

wherein the bore is defined by an inside wall including a plurality of ring-shaped projections.

4,800,157

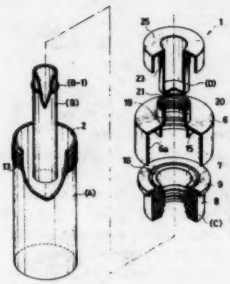
PROCESS FOR PRODUCING THE A-21978C ANTIBIOTICS

Tom E. Eaton, Greenwood; Lynda M. Ford, Indianapolis; Otis W. Godfrey, Jr., Greenwood; Mary L. B. Huber, Danville, and Milton J. Zmijewski, Jr., Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 9, 1985, Ser. No. 773,916

Int. Cl.[4] C12P *21/04*; C12N *1/20*; C12R *1/465*

U.S. Cl. 435—71 **11 Claims**



1. In the process for producing A-21978C antibiotics, the improvement which comprises cultivating *Streptomyces roseosporus* NRRL 15998, or a variant, on a mutant thereof which retains the characteristic of enhanced A-21978C antibiotic production, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until A-21978C antibiotics are produced.

4,800,158

BACTERIAL METHOD AND COMPOSITIONS FOR LINALOOL DEGRADATION

Peter A. Vandenbergh, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 496,140, May 19, 1983, abandoned. This application Mar. 20, 1986, Ser. No. 841,889

Int. Cl.[4] C12N *15/00, 1/20*; C07G *17/00*; C12R *1/40*

U.S. Cl. 435—172.1 **17 Claims**

1. A method for the degradation metabolism of linalool as a pure chemical or in a natural or impure form with a derived Pseudomonas species which comprises:

metabolizing linalool with a strain of Pseudomonas species as the derived Pseudomonas species containing plasmid pSRQ60 as carried in *Pseudomonas fluorescens* NRRL-B-18041, wherein pSRQ60 has been transferred to the derived Pseudomonas species from a parent Pseudomonas, wherein the Pseudomonas species has been cultured prior to being added to the linalool.

4,800,159

PROCESS FOR AMPLIFYING, DETECTING, AND/OR CLONING NUCLEIC ACID SEQUENCES

Kary B. Mullis, La Jolla; Henry A. Erlich, Oakland; Norman Arnheim, Woodland Hills; Glenn T. Horn, Emeryville; Randall K. Saiki, Richmond, and Stephen J. Scharf, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 828,144, Feb. 7, 1986, Pat. No. 4,683,195, which is a continuation-in-part of Ser. No. 824,044, Jan. 30, 1986, abandoned, which is a division of Ser. No. 791,308, Oct. 25, 1985, Pat. No. 4,683,202, which is a continuation-in-part of Ser. No. 716,975, Mar. 28, 1985, abandoned. This application Dec. 17, 1986, Ser. No. 943,948

The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.

Int. Cl.[4] C12N *15/00*; C12P *19/34*; C07H *21/04*

U.S. Cl. 435—172.3 **6 Claims**

1. A process for cloning into a vector a specific nucleic acid sequence contained in a nucleic acid or a mixture of nucleic acids, which process comprises:

a. treating the nucleic acid(s) with one oligonucleotide primer for each strand of each different specific sequence being amplified, under conditions such that for each strand of each different sequence being amplified an extension product of wherein said primer or primers are selected so as to be sufficiently complementary to each strand of each specific sequence to hybridize therewith such that the extension product synthesized from one primer, when it is separated from its complement, can serve as a template for synthesis of the extension product of the other primer, and wherein said primer or primers each contain a restriction site on its 5' end which is the same as or different from the restriction site(s) on the other primer(s);

b. separating the primer extension products from the templates on which they were synthesized to produce single-stranded molecules;

c. treating the single-stranded molecules generated from step (b) with oligonucleotide primers such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, wherein depending on the particular sequence being amplified, steps (a) and (c) are carried out in the presence of from 0 to 10% dimethylsulfoxide or at a temperature of 35° C. to 45° C.

d. adding to the product of step (c) a restriction enzyme for each of said restriction sites to obtain cleaved products in a restriction digest; and

e. ligating the cleaved product(s) into one or more cloning vectors.

4,800,160

PROCESS AND APPARATUS FOR PRODUCING IMMOBILIZED ENZYME GRANULES

Seiya Iguchi, Tokyo; Takeshi Noguchi, Yokohama; Hiroshi Kimura, Kamakura, and Masayo Aihara, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemical, Incorporated, Tokyo, Japan

Filed Jul. 28, 1986, Ser. No. 889,764

Claims priority, application Japan, Aug. 6, 1985, 60-171786

Int. Cl.[4] C12N *11/02, 11/10, 11/04*; C12M *1/40*

U.S. Cl. 435—177 **9 Claims**

1. A process for the production of immobilized enzyme granules from droplets of an enzyme-containing liquid comprising the steps of:

(a) providing a substantially vertical column having therein at least one rotating disc surrounded by walls of the column and containing in a lower region thereof a reservoir of a gelling solution for gelling an enzyme-containing liquid;

(b) providing a supply of the gelling solution at an upper region of the column and allowing the gelling solution to flow downwardly as a layer on the column walls to the gelling solution reservoir;

(c) forming droplets of an enzyme-containing liquid by supplying the enzyme-containing liquid to said rotating disc disposed within the column and then allowing the supplied enzyme-containing liquid to be centrifugally radially expelled from the rotating disc towards the flowing layer of the gelling solution on the walls of the column, wherein the formed droplets come into contact with the flowing layer and are carried therewith to the gelling solution reservoir; and

(d) gelling the formed droplets in the gelling solution reservoir to form the immobilized enzyme granules therefrom.

4,800,161

PROCESS FOR THE MICROBIOLOGICAL PREPARATION OF ALDOSE-1-EPIMERASE

Wolfgang Ebeling; Harald Metz, both of Bickenbach; Wolfgang Brummer, Alsbach; Gunter Schmid, Muhltal, and Ulrich Behrendt, Bischel/Obb., all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Sep. 5, 1985, Ser. No. 772,979

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1984, 3432570

Int. Cl.[4] C12N *9/90, 1/20*

U.S. Cl. 435—233 **7 Claims**

2. A process for the microbiological preparation of aldose-1-epimerase, comprising cultivating a microorganism of the genus Acinetobacter in a nutrient medium, and subsequently releasing the aldose-1-epimerase from the resulting cells and isolating said aldose-1-epimerase.

4,800,162

METHOD FOR RESOLUTION OF STEROISOMERS IN MULTIPHASE AND EXTRACTIVE MEMBRANE REACTORS

Stephen L. Matson, Harvard, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Filed Apr. 1, 1987, Ser. No. 33,962

Int. Cl.[4] C12P *41/00*

U.S. Cl. 435—280 **157 Claims**

1. A method for resolving a racemic mixture comprising:

a. providing in a first fluid a racemic mixture having at least a first and second stereoisomer to one side of an enzyme activated membrane wherein said enzyme which activates said membrane catalyzes the reaction of the first stereoisomer into a chiral product having an altered chemical composition;

b. providing concurrently a second fluid, substantially immiscible in said first fluid, to the opposite side of said enzyme activated membrane,

whereby said racemic mixture is resolved with said chiral product of step a principally diffusing into said second fluid from said enzyme activated membrane so that said second fluid predominantly includes said chiral product and said first fluid predominantly includes said second stereoisomer.

4,800,163

FLOW CHAMBER AND ELECTRO-MANIPULATOR INCORPORATING SAME

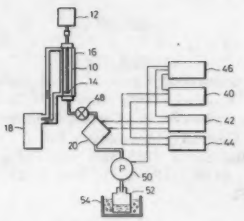
Tadaaki Hibi; Miyoji Sugiura; Hiromi Kano, all of Tsukuba; Sigeyuki Kimura, Hino, and Takeshi Kazami, Tsukuba, all of Japan, assignors to Ntl. Inst. of Agrobiological Resources, Ibargi and Nihon Bunko Kogyo Kabushiki Kaisya, Tokyo, both of, Japan

Filed Dec. 15, 1987, Ser. No. 133,722

Claims priority, application Japan, Dec. 15, 1986, 61-297925; Dec. 15, 1986, 61-297926

Int. Cl.[4] C12M *1/00;* C12N *13/00*

U.S. Cl. 435—287 **8 Claims**



1. An electro-manipulator comprising:

a reservoir for storing a sample on which electrofusion or electro-transfection is to be conducted, said reservoir having an outlet from which said sample is discharged;

a flow chamber including a spacer made of an electrically insulating flat plate, said spacer having two flat opposing surfaces, said spacer having an opening formed between and through said flat opposing surfaces so as to in part form a chamber, a first flat electrode member placed on one of said flat opposing surfaces and a second flat electrode member placed on the other of said flat opposing surfaces with said spacer therebetween, an inlet, an outlet, and an operation port, said inlet, said outlet and said operation port communicating with said chamber formed by said spacer and said first and second electrode members;

a sample introducing passageway for connecting said outlet of said reservoir to said inlet of said flow chamber;

a downstream flow passage connected to said outlet of said flow chamber;

sample transferring means connected to said operation port of said flow chamber for decreasing the pressure in said flow chamber when said sample is to be introduced into said flow chamber and for increasing the pressure in said flow chamber when said sample is to be discharged from said flow chamber;

flow passage switch-over means for opening said sample introducing passageway while closing said downstream flow passage at said outlet of said flow chamber when the pressure in said flow chamber is decreased by said sample transferring means, and for closing said sample introducing means while opening said downstream flow passage when the pressure in said flow chamber is increased by said sample transferring means; and

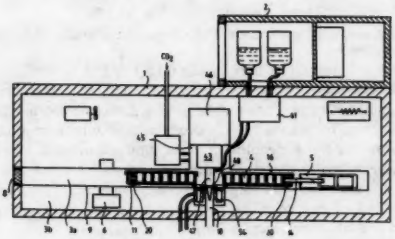
means for carrying out electro-fusion or electrotransfection by the application of a voltage between said first and second electrode members of said flow chamber.

4,800,164

AUTOMATIC DEVICE FOR THE ANALYSIS AND CLONING OF CELLULAR CULTURES AS WELL AS FOR BACTERIOLOGICAL ANALYSIS

Jean-Claude Bisconte, Paris, France, assignor to Institut National de la Sante et de la Recherche Medicale-INSERM, Paris, France

Filed Jul. 2, 1985, Ser. No. 751,248
Claims priority, application France, Jul. 12, 1984, 84 11073
Int. Cl.[4] C12M *1/18*
U.S. Cl. 435—300 32 Claims



1. An automatic device for analyzing and cloning cellular cultures as well as for bacteriological analysis, comprising:

a first enclosure having isolating walls and divided into a first compartment and a second compartment surrounding the first compartment;

at least one microscopic device for observation of said cultures, which is integral with a ceiling and a floor of said first compartment,

access means for accessing an interior of said first compartment;

support means for supporting said first compartment within said second compartment;

a device for aspiration/injection of cell medium or cells fixed to a housing formed in said ceiling of said first compartment;

a plate including several micro-wells for receiving said cellular cultures and cell medium, said micro-wells being disposed in at least one concentric circular row, means for slidably supporting said plate inside said first compartment, said plate being provided with a central opening for access of said aspiration/injection device into a discharge and sterilization well fixed to the floor of said first compartment;

drive means located in said first compartment and comprising means for rotating said plate and means for moving said plate vertically and horizontally to thus orientate each micro-well with respect to said microscopic device;

means for providing homeothermic conditions inside said enclosure,

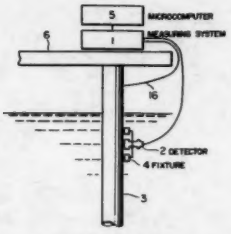
a second enclosure, disposed outside said first enclosure, said second enclosure including a plurality of reservoirs for containing nutritive media in one reservoir and at least one other product in at least one other reservoir, cooling means for preserving the contents of said reservoirs means, and means for selectively supplying said nutritive media and said at least one other product to said aspiration/injection device by means of valve means.

4,800,165

METHOD OF DETECTING CORROSION RATE OF MEMBER OF STEEL MATERIAL

Tomoki Oka; Hiroshi Kihira; Kazumi Matsuoka, and Satoshi Ito, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 9, 1987, Ser. No. 1,734
Claims priority, application Japan, Jan. 11, 1986, 61-3905
Int. Cl.[4] G01N *17/00, 31/00;* G01R *27/02*
U.S. Cl. 436—6 3 Claims



1. A method of detecting the rate of corrosion of an existing steel structure installed in a corrosive environment, said steel structure having a surface section to which a probe is to be attached for detecting said corrosion rate, said method comprising the steps of:

removing deposits from said surface section of said steel structure so that an AC impedance of said surface section, when electrochemically measured by application of potential variation thereto at a predetermined high frequency range, takes a first value within a range of 5 Ωcm^2 to 50 Ωcm^2;

measuring the impedance of said measurement surface by application of potential variation at a predetermined low frequency range to obtain a second AC impedance value;

calculating the difference between said first and second measured values to detect a corrosion-reaction resistance of said surface section; and

determining the rate of corrosion of said surface section on the basis of said detected corrosion-reaction resistance of said surface section and according to a precalculation relation between the rate of corrosion and the corrosion-reaction resistance;

whereby the corrosion rate can be determined directly on said surface section without the need for a separate corrodible testing means.

4,800,166

METHOD AND APPARATUS FOR MONITORING THE AUTOMATED SYNTHESIS OF PEPTIDES

Marcus J. Horn, Cambridge, and Joanne Recchia, Norwood, both of Mass., assignors to Applied Protein Technologies, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 725,213, Apr. 19, 1985, Pat. No. 4,701,304. This application Jun. 6, 1986, Ser. No. 871,513
Int. Cl.[4] G01N *33/68*
U.S. Cl. 436—55 16 Claims

1. A process for monitoring a solid-phase peptide synthesis for free amino ends of unreacted peptide chains, comprising:

A. synthesizing a peptide chain by adding a blocked amino acid, comprising an amino acid bound to a blocking agent, to a peptide chain that is anchored to the solid-phase;

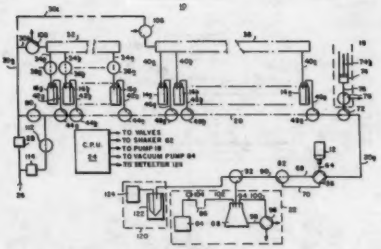
B. reacting the solid phase with a monitoring agent that forms a covalent bond with amino groups under reaction conditions that promote such covalent bonding.

C. washing the solid phase with a washing solution to remove non-covalently bound monitoring agent from the solid phase;

D. reacting the solid phase with a cleaving agent that selec-

tively removes the covalently bound monitoring agent from the amino ends of the unreacted peptide chains while leaving the blocked amino termini and the peptide chains intact, said monitoring agent not being the same as or similar to said blocking agent of the first step, such that said cleaving agent will cleave said monitoring agent but not said blocking agent;

E. measuring quantitatively the amount of the monitoring agent removed; and



F. depending upon the number of unreacted peptide chains, as determined by the quantitative measurement of said removed monitoring agent, either

1. repeating the process with the same blocked amino acid or;

2. removing the blocking agent from the terminal amino group and repeating the process with a subsequent blocked amino acid in the peptide sequence.

4,800,167

REAGENT AND PROCESS FOR THE DETERMINATION OF HEMOGLOBIN IN BLOOD

Mark W. Bailey, Highland Park, and Myrna G. Ulanday, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 10, 1987, Ser. No. 36,604

Int. Cl.[4] G01N *33/72*

U.S. Cl. 436—66 **9 Claims**

1. A reagent for determining the hemoglobin content of whole blood comprising:

an aqueous solution of polyvinylpyrrolidone of molecular weight from about 10,000 to about 360,000 at a pH greater than about 8.0 to denature hemoglobin in whole blood whereby, upon addition to a blood sample, all hemoglobin derivatives are solubilized to form a product having a maximum photometric absorbance at a wavelength of about 575 nm.

4,800,168

TWO REAGENT SYSTEM FOR THE COLORIMETRIC DETERMINATION OF CHLORIDE IONS IN BODY FLUIDS

Richard Kaufman, Belleville, and Alex Wesolowski, Florham Park, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 17, 1985, Ser. No. 788,280

Int. Cl.[4] G01N *33/483*

U.S. Cl. 436—124 **16 Claims**

1. A colorimetric method for measuring chloride ion concentration in a sample of body fluid which method comprises the steps of:

a. Mixing a sample of body fluid with a water soluble color reagent comprised of about 60 to 80 mmol per liter Fe^{+++}, about 1.75 to 2.75 mmol per liter Hg^{++}, and about 2.75 to 3.75 mmol per liter SCN^- ions;

b. Measuring the absorbance of the mixture of Step at from about 450 to 550 nm;

c. Adding an iron complexing reagent comprised of about 225 to 325 mmol per liter of a salt of EDTA to the mixture of Step a; and

d. Measuring the absorbance of said mixture of Step c at from about 450 to about 550 nm;

e. Determining the chloride ion concentration from Steps b and d,

wherein the difference between the second absorbance measurement and the first absorbance measurement is proportional to the chloride concentration in said sample.

4,800,169

TEST AIDS AND METHOD FOR THE PREPARATION THEREOF

Bruno Bömer, Berg.-Gladbach, and Karl-Erwin Piejko, Cologne, both of Fed. Rep. of Germany, assignors to Miles Inc., Elkart, Ind.

Filed Jul. 16, 1987, Ser. No. 74,238

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1986, 3625852

Int. Cl.[4] G01N *21/03*; C12Q *1/28*

U.S. Cl. 436—166 **6 Claims**

1. A method for preparing a test aid for detecting an analytical substance by means of a redox reaction which method comprises adding a decolorant consisting essentially of an oxidizable aromatic amino or hydrazino compound which does not couple with itself to a single-component indicator composition devoid of any coupling component capable of reacting with an oxidation product to form a dyestuff.

4,800,170

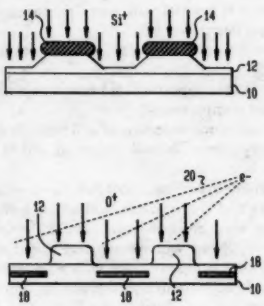
PROCESS FOR FORMING IN A SILICON OXIDE LAYER A PORTION WITH VERTICAL SIDE WALLS

Kailash C. Jain, Sterling Heights, and Bernard A. MacIver, Lathrup Village, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1987, Ser. No. 104,091

Int. Cl.[4] H01L *21/425, 21/467*

U.S. Cl. 437—24 **11 Claims**



1. A process of forming over a substrate a silicon oxide layer having a pattern of openings with substantially vertical side walls comprising the steps of:

forming a layer of silicon oxide over a surface of the substrate;

forming a mask over the silicon oxide layer leaving exposed the pattern desired in the silicon oxide layer;

partially removing by a wet etchant the silicon oxide exposed in the pattern, leaving sloped regions in the silicon oxide layer where it underlies the edges of the mask;

irradiating the substrate with high energy particles to damage selectively the silicon oxide layer; and

removing by a wet etchant the remainder of the exposed

silicon oxide to form in the silicon oxide layer the desired pattern of openings with substantially vertical side walls.

7. The process of forming a patterned insulated layer buried in a silicon crystal substrate comprising the steps of:

forming a layer of silicon oxide over a surface of the substrate;

forming a mask over the silicon oxide layer leaving exposed the pattern desired in the silicon oxide layer;

partially removing by a wet etchant the silicon oxide exposed in the pattern, leaving sloped regions in the silicon oxide layer where it underlies the edges of the mask;

irradiating the substrate with high energy particles to damage selectively the silicon oxide layer;

removing by a wet etchant the remainder of the exposed silicon oxide to form in the silicon oxide layer the desired pattern of openings with substantially vertical side walls;

implanting ions through the patterned silicon oxide layer for forming a buried ion-rich layer in the silicon substrate; and

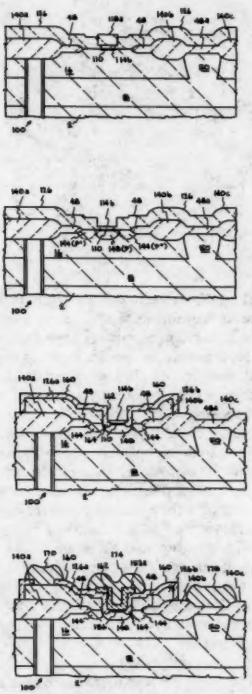
heating the substrate for converting the ion-rich layer into a buried insulating layer.

4,800,171

METHOD FOR MAKING BIPOLAR AND CMOS INTEGRATED CIRCUIT STRUCTURES

Ali Iranmanesh, San Antonio, Tex., and Mammen Thomas, San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 2, 1987, Ser. No. 104,459
Int. Cl.[4] H01L *21/365*
U.S. Cl. 437—31 **19 Claims**



1. An improved method of constructing one or more integrated circuit components including a bipolar transistor on a semiconductor substrate without damaging areas of the substrate wherein active elements of the integrated circuit components will be formed which comprises:

(a) forming one or more isolated regions in said substrate wherein an integrated circuit device may be formed which is isolated from other devices formed in adjacent regions;

(b) forming a collector well for a bipolar transistor in said substrate;

(c) forming field oxide portions in the surface of said substrate to further isolate said regions from one another and to isolate said collector well from other elements of said bipolar transistor;

(d) forming a buffer oxide layer over exposed portions of said substrate;

(e) forming a first nitride mask layer over said buffer oxide layer;

(f) forming a second oxide mask layer over said first nitride mask layer to permit selective etching of either mask layer;

(g) forming a patterned photoresist mask over said second mask layer comprising a different material than the material in said first and second mask layers;

(h) etching exposed portions of at least said second mask layer to leave one or more multilayer pedestals under said photoresist mask corresponding to one or more active regions to be formed in said substrate;

(i) removing said photoresist mask;

(j) forming a polysilicon layer over said structure;

(k) planarizing said polysilicon layer to expose the top of said multilayer pedestals;

(l) implanting dopant into portions of said polysilicon corresponding to base contact electrode portions for said bipolar transistor;

(m) removing said second mask portion of said multilayer pedestals by wet etching to expose sidewall portions of said planarized polysilicon adjacent said multilayer pedestals; and

(n) oxidizing said exposed sidewall portions of said polysilicon to provide an insulating layer of oxide between said polysilicon which will comprise a base contact electrode and a subsequently deposited conductive material which will function as an emitter contact electrode.

4,800,172

MANUFACTURING METHOD FOR CASCADED JUNCTION FIELD EFFECT TRANSISTOR

Jun-ichi Okano, Hyogo, and Kiyohito Matsumoto, Himeji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 4, 1988, Ser. No. 152,396
Claims priority, application Japan, Feb. 9, 1987, 62-26366
Int. Cl.[4] H01L *21/385, 29/80*
U.S. Cl. 437—51 **18 Claims**

1. A method for manufacturing cascaded junction type field effect transistors which comprises the steps of:

forming a channel region of a first conductivity type on a substrate of a second conductivity type;

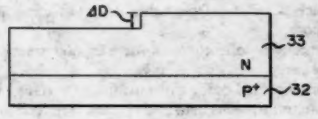
creating variations in the surface level on the surface of said channel region;

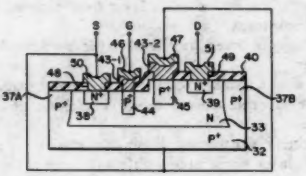
forming source and drain regions of the first conductivity type in the low and high level surface areas of said channel region, respectively;

forming an insulation film having first and second gate diffusion holes formed in a position corresponding to the low and high level surfaces of said channel region;

forming first and second junction gates in the low and high level surface areas of said channel region by simultaneously doping an impurity of the second conductivity

type into said channel region through said holes of said insulation film using the same diffusion source; and





connecting said substrate to said second junction gate which is near said drain region, and to said source region.

4,800,173

PROCESS FOR PREPARING SI OR GE EPITAXIAL FILM USING FLUORINE OXIDANT

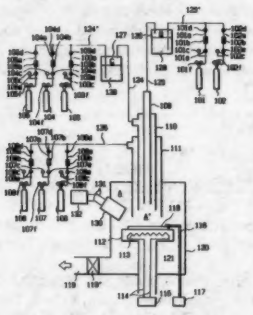
Masahiro Kanai; Junichi Hanna, and Isamu Shimizu, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 15,951

Claims priority, application Japan, Feb. 20, 1986, 61-33925; Feb. 20, 1986, 61-33926; Feb. 27, 1986, 61-40334

Int. Cl.[4] H01L *21/205*

U.S. Cl. 37—081 **18 Claims**



1. A process for preparing an improved valence electron controlled functional epitaxial film on a substrate, comprising the steps of:

(a) introducing through a first gas transportation conduit into an evacuated film-forming space having said substrate therein; a gaseous raw material (i) containing hydrogen atoms and silicon atoms or gemanium atoms;

(b) separately through a second gas transportation conduit concentric with the first gas transportation conduit, introducing a gaseous material (ii) capable of oxidizing the raw material (i), said gaseous material (ii) comprising F_2 gas;

(c) separately, through a third gas transportation conduit concentric with the first and second gas transportation conduits, introducing a gaseous raw material (iii) capable of imparting a valence electron controlling element;

(d) providing a mixing and reaction region for said gaseous materials (i), (ii) and (iii) adjacent said film forming space at outlets of said first, second and third concentric gas transportation conduits;

(e) mixing and chemically reacting said three gaseous materials (i), (ii) and (iii) in the absence of a plasma and under reduced pressure in said mixing and reaction region surrounding the surface of said substrate, while controlling the volume ratio of said gaseous material (i) to said gaseous material (ii) to be from 1/20 to 100/1, and the volume ratio of said gaseous material (iii) to said gaseous material (i) to be from $1/1\times10^6$ to 1/10, respectively;

(f) maintaining said substrate at an elevated temperature to generate a plurality of precursors containing excited precursors and causing at least one of the precursors to form said film; and

(g) maintaining the length between the outlets of said first, second and third concentric gas transportation conduits forming said mixing and reaction region and the surface of the substrate from about 5 millimeters to 15 centimeters.

4,800,174

METHOD FOR PRODUCING AN AMORPHOUS SILICON SEMICONDUCTOR DEVICE USING A MULTICHAMBER PECVD APPARATUS

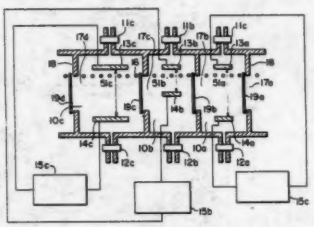
Shinichiro Ishihara, Takatsuki; Masatoshi Kitagawa, Hirakata, and Takashi Hirao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1987, Ser. No. 50,699

Claims priority, application Japan, May 20, 1986, 61-115254

Int. Cl.[4] H01L *21/205*

U.S. Cl. 437—101 **5 Claims**



1. In a method of producing an amorphous silicon semiconductor device having the steps of:

preparing a capacitance-coupled high-frequency glow-discharge semiconductor production apparatus which is equipped with a plurality of glow-discharge chambers each having a high-frequency electrode and a substrate holder opposing each other and means for supplying material gases to said glow-discharge chambers;

effecting, in a first one of said glow-discharge chambers, plasma reaction so as to deposit, on a substrate introduced into the first glow-discharge chamber, a first amorphous silicon layer or a first amorphous layer consisting mainly of silicon having a first conductivity type, and

effecting, after moving said substrate into a second one of said glow-discharge chambers, a plasma reaction of a material gas different from said material gas used in the first glow-discharge chamber, thereby forming a second amorphous silicon layer of a second conductivity type on said first layer;

the improvement comprising:

that said substrate with said first amorphous silicon layer or said first amorphous layer mainly consisting of silicon of said first conductivity formed thereon is moved from said first glow-discharge chamber to said second glow-discharge chamber after a predetermined gas atmosphere is formed in said first glow-discharge chamber;

that the distance between said electrode and said substrate holder is made smaller in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers than in the other of said first and second glow-discharge chambers;

that the temperature of said substrate is set higher in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers; and

that the pressure is set higher in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers than in the other of said first and second glow-discharge chambers.

4,800,175

PHOSPHOROUS PLANAR DOPANT SOURCE FOR LOW TEMPERATURE APPLICATIONS

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois Television Products Inc., Toledo, Ohio

Filed May 29, 1987, Ser. No. 56,621
Int. Cl.[4] H01L *21/225*
U.S. Cl. 437—160 **18 Claims**

1. A doping composition for forming a dopant source wafer for doping by vapor phase transport of P_2O_5 a silicon wafer with phosphorus for low temperature applications, the compsoition consisting essentially of:

(a) finely divided particles of a polycrystalline ceramic having an average linear coefficient of thermal expansion of less than about $32\times10^{-7/°C.}$ from zero to 300° C. and consisting essentially of the following oxides in approximate mole percent;

OXIDE	MOLE PERCENT
P_2O_5	45–75
Al_2O_3	11–28
Ta_2O_5	6.5–13
SiO_2	0–20
La_2O_3	0–7

where $P_2O_5+Al_2O_3+Ta_2O_5$ is at least about 75 mole percent of the composition

(b) finely divided particles of Al_2O_3, and

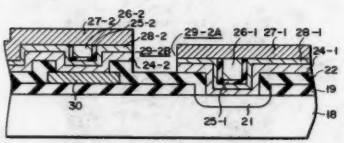
(c) H_3PO_4 in an aqueous solution for reaction with Al_2O_3 to form a binder for the ceramic particles.

4,800,176

METHOD FOR FORMING CONTACT PORTION IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Masakazu Kakumu, and Tetsuya Asami, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 19, 1988, Ser. No. 183,138
Claims priority, application Japan, May 29, 1987, 62-133797
Int. Cl.[4] H01L *21/283*
U.S. Cl. 437—193 **20 Claims**



1. A method of manufacturing semiconductor devices, comprising the steps of:

forming a first conductive layer on a semiconductor substrate;

forming a first insulation film on said first conductive layer;

forming at least one contact hole in said first insulation film formed on said first conductive layer;

forming a semiconductor layer on said first insulation film having said contact hole formed therein;

forming a second insulation film on said semiconductor layer;

forming a planarization film on said second insulation film;

selectively removing said planarization film by anisotropic etching, to leave part of said planarization film in, and filling, said contact hole;

removing a portion of said second insulation film exposed by the anisotropic etching;

forming a second conductive layer on substantially the entire surface of the resultant semiconductor structure; and

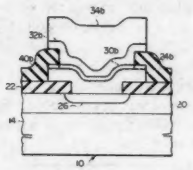
patterning said second conductive layer and semiconductor layer, to form a laminated structure of a wiring layer.

4,800,177

SEMICONDUCTOR DEVICE HAVING MULTILAYER SILICIDE CONTACT SYSTEM AND PROCESS OF FABRICATION THEREOF

Masahiko Nakamae, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 14, 1986, Ser. No. 840,317
Claims priority, application Japan, Mar. 14, 1985, 60-50911
Int. Cl.[4] H01L *21/283, 21/225*
U.S. Cl. 437—193 **4 Claims**



1. A process of fabricating a semiconductor device, comprising

(a) forming a heavily doped first semiconductor layer of a first conductivity type,

(b) forming a first protective layer of an insulating material on said first semiconductor layer and having an opening allowing a portion of the first semiconductor layer to be exposed therethrough,

(c) forming a second silicon layer partly on said first protective layer and partly on said portion of said first semiconductor layer,

(d) heavily doping said second silicon layer with a dopant of a second conductivity type opposite to said first conductivity type and thereafter annealing the doped second silicon layer to form in said first semiconductor layer an active region of said second conductivity type substantially aligned with said opening with enhanced ohmic contact provided between said active region and said second silicon layer,

(e) forming a substantially non-doped third silicon layer on said second silicon layer,

(f) forming a second protective layer of an insulating material on said third silicon layer and having an opening allowing a portion of the third semiconductor layer to be exposed therethrough, the opening in the second protective layer being substantially aligned with the opening in said first protective layer across said second and third silicon layers,

(g) forming a layer of a refractory metal partly on said second protective layer and partly on said portion of said third silicon layer,

(h) heating the resultant structure to cause the refractory metal layer and the third silicon layer to react with each other for thereby forming a metal silicide layer of the refractory metal silicide,

(i) forming a barrier layer of at least one metal on said metal silicide layer, and

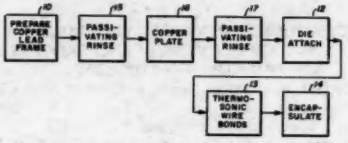
(j) forming an electrode layer including a highly conductive metal on said barrier layer.

4,800,178

METHOD OF ELECTROPLATING A COPPER LEAD FRAME WITH COPPER

Ranjan J. Mathew, and Billy J. Lang, II, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 16, 1987, Ser. No. 96,987
Int. Cl.[4] H01L *21/60, 23/48*
U.S. Cl. 437—206 5 Claims



1. A process for treating a copper lead frame tape that is to be used in the tape assembly of semiconductor devices, said process comprising the steps:

cleaning said copper tape to remove surface contaminants;

electroplating a layer of copper on said cleaned copper tape;

passivating the surface of said electroplated layer by immersing it in a solution containing a weak organic acid;

rinsing said passivated copper tape;

bonding a semiconductor device to said tape; and

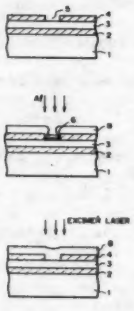
thermosonically bonding gold wires between said tape and said semiconductor device.

4,800,179

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE

Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 12, 1987, Ser. No. 60,923
Claims priority, application Japan, Jun. 13, 1986, 61-137509
Int. Cl.[4] H01L *21/04, 21/00*
U.S. Cl. 437—203 6 Claims



1. A method for fabricating a semiconductor device, which comprises:

forming a contact hole in an insulating film formed on a first wiring composed of first Al film;

covering the insulating film with a second Al film for a second wiring;

applying laser beam pulses of an intensity and a pulse width to the Al second film for the second wiring from above so as to remove any oxide or adsorbed material formed on the first Al film to the first wiring, and

patterning the second Al film to form the second wiring.

4,800,180

CERAMIC ARTICLES CONTAINING SILICON CARBIDE

Jerome W. McAllister, Hudson, Wis.; Lien-Huong T. Pham, St. Paul, and Harold G. Sowman, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 26, 1986, Ser. No. 912,830
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—88 14 Claims

1. A shaped article consisting essentially of a ceramic matrix and dispersed therein 5 to 30 weight percent silicon carbide, said silicon carbide having a primary particle size of less than 0.1 micrometer and a modulus of elasticity (E) value greater than 690 GPa, and said article having a modulus of elasticity (E) value of at least 10 percent greater than the inherent modulus of elasticity (E) value of the fully dense host matrix.

4,800,181

SILICON CARBIDE REFRACTORY COMPOSITION

Perry B. Lassiter, Johnson City, and Larry B. Rea, Erwin, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 1, 1987, Ser. No. 91,698
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—89 4 Claims

1. A castable refractory mix composition comprising:

a. from about 10 to about 15% by weight of an aqueous slip of ground fused silica particles, comprising an aqueous dispersion of fine fused silica particles produced by wet grinding such that at least about 98% of said ground fused silica particles have a particle size less than 325 mesh;

b. from about 25 to about 32% by weight of alumina particles, at least about 99% of said alumina particles having a particle size less than 325 mesh;

c. from about 55 to about 65% by weight of silicon carbide refractory particles of a relatively large particle size;

d. from about 0.015 to about 0.04% by weight of a water-soluble wetting agent; and

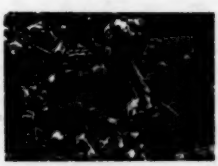
e. from 0 to about 5% by weight added water.

4,800,182

SILICON NITRIDE-SILICON CARBIDE COMPOSITE MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Kansei Izaki; Takamasa Kawakami; Kouichi Hakkei, and Kazuhiro Ando, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Jan. 20, 1987, Ser. No. 4,476
Int. Cl.[4] C04B *35/56, 35/58*
U.S. Cl. 501—92 6 Claims



1. A sintered silicon nitride-silicon carbide composite mate-

rial comprising substantially silicon nitride predominantly in β-phase and about 5 to 35% by weight of silicon carbide predominantly in β-phase, having a microstructure in which the silicon nitride is in the form of fine grains comprising elongated grains, 0.2 to 1.0 μm in length of minor axis and 1 to 10 μm in length of major axis, and equiaxed grains, 1 μm or below in average size, and the silicon carbide is in the form of equiaxed grains, 1 μm or below in average size, said silicon carbide grains being uniformly dispersed.

4,800,183

METHOD FOR PRODUCING REFRACTORY NITRIDES

Thomas C. Quinby, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 9, 1986, Ser. No. 849,625
Int. Cl.[4] C01B *21/06*; C01F *7/00*
U.S. Cl. 501—96 6 Claims

1. A process for making metal nitride powders comprising: combining Melamine and a soluble metal compound in a non-reacting solvent, said metal compound having a cation capable for reacting with said Melamine to form a metal-Melamine compound;

heating said Melamine and said metal compound in said solvent until in solution resulting in the formation of a metal-Melamine compound, said Melamine present in suitable excess to cause precipitation upon cooling and to minimize particle size of a metal nitride power reaction product;

cooling said solution until a precipitate of said metal-Melamine compound forms;

separating said precipitate from said solvent; and

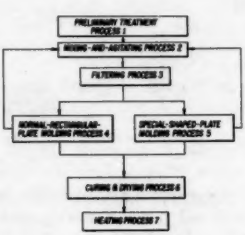
calcining said precipitate in air at 600° to 700° C.

4,800,184

METHOD FOR PRODUCING SULFUR PLATES

Masaki Kawasaki, Fukuoka, and Kunio Mizukami, Yotsukaido, both of Japan, assignors to Kabushiki-Kaisha Yamau, Fukuoka and Onoda Cement Company Limited, Onoda, both of, Japan

Filed Aug. 4, 1987, Ser. No. 81,932
Claims priority, application Japan, Aug. 6, 1986, 61-185890
Int. Cl.[4] C04B *35/60*
U.S. Cl. 501—140 6 Claims


PRELIMINARY TREATMENT PROCESS 1
MIXING AND AGITATING PROCESS 2
FILTERING PROCESS 3
NORMAL-RECTANGULAR-PLATE MOLDING PROCESS 4
SPECIAL-SHAPED-PLATE MOLDING PROCESS 5
CURING & DRYING PROCESS 6
HEATING PROCESS 7

1. A method for producing sulfur plates comprising:

(a) producing an aqueous mixture by mixing and agitating sulfur powder, inorganic powder, fibers and water,

(b) charging the aqueous mixture into a vacuum filtering machine which is provided with a belt-type filter and in the vacuum filtering machine continuously filtering the aqueous mixture and continuously forming the aqueous mixture into plates,

(c) molding the plates while dewatering,

(d) curing and drying the plates, and

(e) heating the plates at a temperature higher than the melting point of the sulfur.

4,800,185

REGENERATION OF METAL CONTAMINATED HYDROCARBON CONVERSION CATALYTSTS

Frank J. Elvin, Kenner, La.; Jan-Erik Otterstedt, Surte, Sweden, and Jin S. Yoo, Flossmoor, Ill., assignors to ChemCat Corporation, New Orleans, La.

Continuation of Ser. No. 895,130, Aug. 11, 1986, abandoned.
This application Aug. 28, 1987, Ser. No. 90,645
Int. Cl.[4] B01J *38/66, 38/64, 29/38*; C10G *11/05*
U.S. Cl. 502—26 17 Claims

1. A process for treating a catalyst contaminated with at least one metal which was so contaminated while promoting cracking, in the substantial absence of added molecular hydrogen, of a hydrocarbon feedstock containing said metal, said catalyst comprising at least one synthetic crystalline material capable of promoting said conversion, said process comprising:

demetallizing said catalyst to reduce the amount of said metal on said catalyst and produce a demetallized catalyst; and at least one of the following:

(1) contacting said demetallized catalyst with ammonium ions to increase the ammonium ion content of said demetallized catalyst; and

(2) contacting said demetallized catalyst with rare earth metal ions to increase the rare earth metal ion content of said demetallized catalyst.

4,800,186

REGENERATION OF FLUOROCARBONSULFONIC ACID CATALYSTS

Emmett L. Tasset, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 28, 1987, Ser. No. 114,323
Int. Cl.[4] B01J *31/40, 49/00, 38/52*; C07C *43/11*
U.S. Cl. 502—33 8 Claims

1. A process for regenerating a fluorocarbon-sulfonic acid polymer catalyst which has been deactivated due to coking in an alkylation process, which comprises contacting the deactivated catalyst with heating to a temperature of from about 40° to about 100° C. for a period of time sufficient to restore the activity of said catalyst with a solvent combination of (1) at least one solvent which swells the structure of the polymer and (2) diphenyloxide as a diluent solvent to dissolve the deactivating components and reactivate the catalyst and wherein the swelling solvent is present in the solvent mixture in an amount of from about 5 to about 40 percent, the remainder being diphenyl oxide.

4,800,187

METHOD OF CRYSTALLIZING A ZEOLITE ON THE SURFACE OF A MONOLITHIC CERAMIC SUBSTRATE

Irwin M. Lachman, and Mallanagouda D. Patil, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 28, 1987, Ser. No. 113,475
Int. Cl.[4] B01J *29/06*
U.S. Cl. 502—64 29 Claims

1. A method of crystallizing a zeolite on the surfaces of a monolithic ceramic substrate, comprising

(a) providing a sintered monolithic substrate having an oxide composition consisting essentially of 45–75% by weight silica, 8–45% by weight alumina, and 7–20% by weight magnesia; and

(b) hydrothermally treating the substrate with an aqueous solution comprising sodium oxide or sodium hydroxide and alumina at a temperature and for a time sufficient to crystallize a zeolite on the surfaces of said substrate.

4,800,188

METHOD FOR SUPPORTING METALLOPORPHYRINS ON POLYBENZIMIDAZOLE POROUS ARTICLES

James P. Shepherd, Springfield, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 20, 1987, Ser. No. 28,353
Int. Cl.[4] B01J *31/06*; C08J *9/36*
U.S. Cl. 502—159 37 Claims

1. A process for the production of a microporous polybenzimidazole article onto which a metalloporphyrin complex has been bound comprising:

(a) preparing a microporous polybenzimidazole shaped article;

(b) reacting the microporous polybenzimidazole article with a strong base to produce a polybenzimidazole anion on the surface of the article; and

(c) mixing the anionized polybenzimidazole article with a metalloporphyrin salt solution to form a microporous polybenzimidazole article supporting a metalloporphyrin complex.

4,800,189

MASS FOR REMOVAL, THROUGH CHEMICAL SORPTION, OF HOMOGENEOUSLY DISSOLVED IMPURITIES, PARTICULARLY OXYGEN, FROM GASES OR LIQUIDS

Manfred Eschwey, Dusseldorf, and Werner Schleser, Duisburg, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed May 27, 1987, Ser. No. 54,940
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1986, 3618942
Int. Cl.[4] B01J *20/30, 20/10, 20/06, 23/26*
U.S. Cl. 502—400 4 Claims

1. In a procedure for producing a chromium-containing mass usable for removing oxygen impurities by chemical sorption from a gas to be purified wherein the mass is formed by applying chromium to an oxidic carrier, then activating the carrier with oxygen at an elevated temperature and then subjecting the activated carrier to a reduction step by treatment with a reducing gas before bringing the mass into contact with the gas to be purified, the improvement being in subjecting the activated carrier to a second stage of reduction by treatment with a reactive process gas selected from the group consisting of monosilane, disilane, halogensilane, dichlorosilane, diborane, arsine, phosphine, trimethylgallium, trimethylaluminum, trimethylindium, ethylgallium, ethylaluminum, and trimethylindium and mixtures there-of with inert gases whereby the mass is capable of removing oxygen in amounts as low as trace amounts from the gas to be purified including a reactive process gas containing oxygen impurities as well as from a gas selected from the group consisting of nitrous oxide, hydrogen halides, hydrogen sulfide, sulfur dioxide, ammonia, carbon dioxide, and saturated and aromatic hydrocarbons and ether.

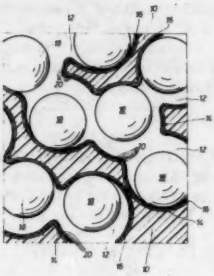
4,800,190

FILTER MATERIAL AND PROCESS FOR THE PRODUCTION THEREOF

Klaus Smolik, Gefrees, Fed. Rep. of Germany, assignor to Helsa-Werke Helmut Sandler GmbH & Co. KG, Gefrees, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 95,820
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1987, 3719418
Int. Cl.[4] B01J *20/02*
U.S. Cl. 502—416 13 Claims

8. A filter material comprising: an open-pore foam carrier; first adsorber particles adhesively secured to the surface of the foam carrier including in the open pores thereof, the size of the first adsorber particles being between 0.1 times and 0.9 times the mean pore diameters of the pores of the foam carrier; and second adsorber particles adhesively secured to the surface of the foam carrier including in the pores thereof, in the regions of aid surface which are between the locations at which said first adsorber particles are adhesively secured to said surface,



said second adsorber particles being of substantially smaller particle size than the first adsorber particles.

4,800,191

LHRH ANTAGONISTS

Andrew V. Schally, 5025 Kawanne Ave., Metarie, La. 70002, and Sandor Bajusz, 10501 Curran Blvd. #5W, New Orleans, La. 70127

Filed Jul. 17, 1987, Ser. No. 74,126
Int. Cl.[4] A61K *37/43*; C07K *7/20*; C08F *283/00*
U.S. Cl. 514—15 19 Claims

1. A peptide selected from the group of peptides having the formula:

$$X\text{-}R^1\text{-}R^2\text{-}R^3\text{-Ser-Tyr-}R^6\text{-Leu-Arg-Pro-}R^{10}\text{-}NH_2$$

wherein

X is an acyl group derived from straight or branched chain aliphatic or alicyclic carboxylic acids having from 1 to 7 carbon atoms,

R^1 is D- or L-Pro, D- or L-Δ^3-Pro, D-Phe, D-Phe(4-H1), D-Ser, D-Thr, D-Ala, D-Nal(1) or D-Nal (2),

R^2 is D-Phe or D-Phe(4-H1),

R^3 is D-Trp, D-Phe, D-Pal, D-Nal(1) or D-Nal (2),

R^6 is D-Cit, D-Hci, D-Cit(Q) or D-Hci(Q) and

R^{10} is Gly or D-Ala,

where Q2 is lower alkyl of 1–3 carbon atoms and H1 is fluoro, chloro or bromo,

and the pharmaceutically acceptable acid addition salts thereof.

4,800,192

HEAT-SENSITIVE RECORDING PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1987, Ser. No. 28,431
Claims priority, application Japan, Mar. 20, 1986, 61-62736
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—200 14 Claims

1. A heat-sensitive recording paper comprising a paper support having provided thereon a heat-sensitive color-forming layer wherein said paper support contains at least 10 wt % of a white pigment having an oil absorbency of no more than 150 cc/100 g in its interior, and also contains a polymer latex with an MFT (minimum film-forming temperature) of no higher than 40° C. in an amount of from 5 to 30 wt % based on the weight of the white pigment.

4,800,193

RECORDING MATERIAL

Keiso Saeki; Masanobu Takashima; Ken Iwakura; Takekatsu Sugiyama, and Masato Satomura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

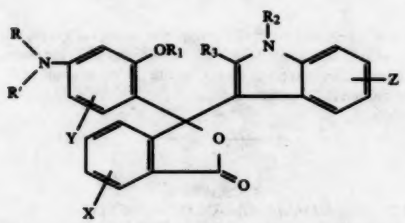
Filed Jul. 28, 1987, Ser. No. 78,509

Claims priority, application Japan, Jul. 28, 1986, 61-177382; Jul. 30, 1986, 61-179444

Int. Cl.[4] B41M *5/16, 5/18, 5/22*

U.S. Cl. 503—217 14 Claims

1. A recording material comprising a support having provided thereon an electron-donating colorless dye and an electron-accepting compound, wherein said electron-donating colorless dye is represented by the following general formula (I):



(I)

wherein R and R' each represents an alkyl group; R_1 represents an aralkyl group, or an alkyl group substituted with an alkoxy or aryloxy group; R_2 and R_3, which may be the same or different, each represents a hydrogen atom, an alkyl group, or an aryl group; and X, Y, and Z, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, a halogen atom, or a substituted amino group.

4,800,194

ACYLPHOSPHOROTRIAMIDES USEFUL AS LIPID-ALTERING AGENTS

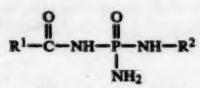
Thomas J. Moorehead, and Allan V. Bayless, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Division of Ser. No. 761,992, Aug. 1, 1985, Pat. No. 4,668,667. This application Dec. 5, 1986, Ser. No. 938,195

Int. Cl.[4] A61K *31/675, 31/66, 31/05, 31/015*

U.S. Cl. 514—89 10 Claims

1. A compound of the class of acylphosphorotriamides which conform to the chemical structure:



wherein R^2 is H or straight or branched chain lower alkyl and R^1 is substituted phenyl, pyridyl or substituted pyridyl, furyl or substituted furyl, naphthyl or substituted naphthyl, benzyl or substituted benzyl, or phenyl(lower)alkyl or substituted phenyl(lower) alkyl; except such compounds wherein R^2 is H and R^1 is 3-pyridyl or 2-furyl or 2-naphthyl or cinnamenyl or benzyl or phenyl substituted by 3-nitro or 4-nitro or 4-halo or 4-amino or 4-(lower)alkoxy or 4-(lower)alkyl or 2-methyl or 2,3-dimethyl or 2,4-dimethyl or 2,4,6-trimethyl or 3-trifluoromethyl or 3-((4-aminophenyl)sulfanyl)amino or 4-cyano or 4-phenyl or 3-phenoxy.

4,800,195

SUBSTITUTED AZO N-PHENYL-N'BENZOYLUREAS AND THEIR USE AS INSECTICIDES AND ACARICIDES

Michael J. Burgess, King's Lynn, England; Robert A. Sewell, MZ Axel, Netherlands, and David P. Clifford, King's Lynn,, England, assignors to The Dow Chemical Company, Midland, Mich.

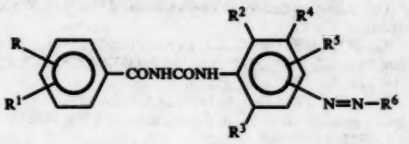
Filed Oct. 13, 1983, Ser. No. 541,768

Claims priority, application United Kingdom, Oct. 19, 1982, 8229674

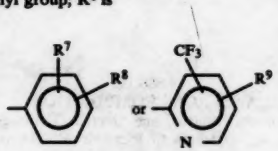
Int. Cl.[4] C07C *127/22;* A01N *47/34*

U.S. Cl. 514—150 5 Claims

1. A N-phenyl-N'-benzoylurea of the general formula

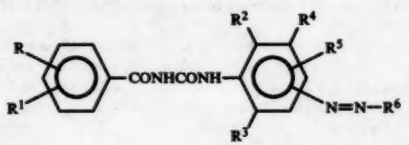


wherein R and R^1 are each independently a hydrogen or halogen atom, a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group; R^2 and R^3 are each independently a hydrogen or halogen atom or a C_1–C_4 alkyl group; R^4 and R^5 are each independently a hydrogen or halogen atom, or a C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy or a C_2–C_4 alkynyl group; R^6 is

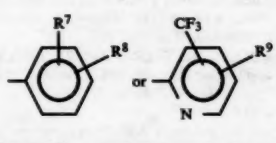


wherein R^7 and R^8 are each independently a hydrogen or halogen atom, or a nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl or cyano group and R^9 is a halogen atom or a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group.

3. A pesticidal composition which comprises as an active ingredient a compound



wherein R and R^1 are each independently a hydrogen or halogen atom, a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group; R^2 and R^3 are each independently a hydrogen or halogen atom or a C_1–C_4 alkyl group; R^4 and R^5 are each independently a hydrogen or halogen atom, or a C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy or a C_2–C_4 alkynyl group; R^6 is



wherein R^7 and R^8 are each independently a hydrogen or halogen atom, or a nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl or

cyano group and R^9 is a halogen atom or a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group in intimate admixture with an inert diluent or carrier.

4,800,196

PHENYL SALICYLATE AND BENZYL SALICYLATE AS ACARICIDAL AGENTS

Yoshiharu Nomura; Shigemasa Aoki, and Akira Nishimura, all of Ako, Japan, assignors to Earth Chemical Co., Ltd., Hyogo, Japan

PCT No. PCT/JP85/00675, § 371 Date Mar. 27, 1987, § 102(e) Date Mar. 27, 1987, PCT Pub. No. WO87/00728, PCT Pub. Date Feb. 12, 1987

PCT Filed Dec. 6, 1985, Ser. No. 41,071

Claims priority, application Japan, Aug. 6, 1985, 60-173867; Aug. 6, 1985, 60-173868

Int. Cl.[4] A01N *37/36*

U.S. Cl. 514—159 **4 Claims**

1. A method for killing mites on a material which comprises applying to said mites a composition containing a miticidal amount of phenyl salicylate or of benzyl salicylate.

4,800,197

ANTI-ACNE COMPOSITION

Alexandra Kowcz, Monroe, and Darrell G. Doughty, Derby, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Jul. 17, 1987, Ser. No. 74,821

Int. Cl.[4] A61K *31/60, 31/615*

U.S. Cl. 514—162 **7 Claims**

1. A cosmetically acceptable composition for treating acne comprising:,

(a) from about 0.2 to about 5.0 weight percent of salicylic acid;

(b) from about 10 to about 60 weight percent of C_2H_5OH or C_3H_7OH;

(c) from about 30 to about 80 weight percent of water; and

(d) from about 0.2 to about 5.0 weight percent of sodium methyl cocoyl taurate or sodium methyl oleoyl taurate; the composition having a pH value of from about 2 to about 3.5.

4,800,198

METHOD OF INDUCING THE DIFFERENTIATION OF MALIGNANT CELLS WITH SECOSTEROL

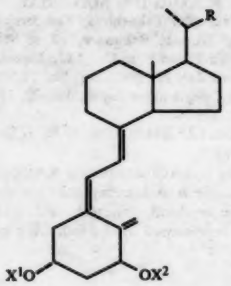
Hector F. DeLuca; Heinrich K. Schnoes, and Wan F. Lau, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 726,553, Apr. 23, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 45,697

Int. Cl.[4] A61K *31/59*

U.S. Cl. 514—167 **7 Claims**

1. A method for inducing cell differentiation in malignant cells which comprises exposing said cells to a compound having the structure



wherein R is selected from the group consisting of hydrogen, methyl, ethyl, and propyl and where X^1 and X^2 represent, independently, hydrogen or an acyl group, in an amount sufficient to induce differentiation.

4,800,199

3-[2-THIAZOLOAMINO]-8-OXO-7-SUBSTITUTED-5-THIA-1-AZABICYCLO-[4.2.0]OCT-2-ENE-2-CARBOXYLIC ACID AND SALTS THEREOF AND DIPHENYLMETHYL ESTERS THEREOF

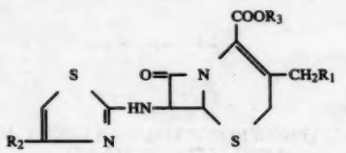
Robert Babine, Pomona, and Ving J. Lee, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 20, 1986, Ser. No. 920,397

Int. Cl.[4] C07D *501/16;* A61K *31/545*

U.S. Cl. 514—202 **20 Claims**

1. A compound selected from those of the formula:



wherein R_1 is hydrogen, alkyl(C_1–C_3), vinyl, acetyloxy or

where $R_4$is hydrogen or alkyl(C_1–C_6); $R_2$is alkyl(C_1–C_3), phenyl, carboxylic acid, (2,2,2-trichloroethoxy)carbonyl, [2-trimethylsilyl)ethoxy]carbonyl, phenylmethylamino carbonyl or ethoxycarbonyl; and R_3 is hydrogen or diphenylmethyl.

4,800,200

4,8-DIHYDRO-8-ARYLISOXAZOLO[4,3-E][1,4]-OXAZEPIN-5(6H)-ONES

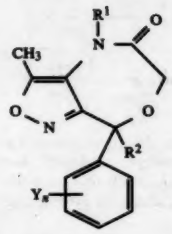
John J. Tegeler, Bridgewater, and Kirk D. Shoger, Piscataway, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Dec. 21, 1987, Ser. No. 135,763

Int. Cl.[4] A61K *31/55;* C07D *498/04*

U.S. Cl. 514—211 **17 Claims**

1. A compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen, loweralkyl, arylloweralkyl, aryloxyloweralkyl, cycloalkylloweralkyl, aminoloweralkyl, loweralkylaminoloweralkyl, diloweralkylamnioloweralkyl, and loweralkoxycarbonylloweralkyl; R^2 is hydrogen or loweralkyl; Y is independently loweralkyl, loweralkoxy, halogen, trifluoromethyl or nitro; and n is an integer having a value from 0 to 2 inclusive wherein aryl of both arylloweralkyl and aryloxyloweralkyl is phenyl substituted by up to 3 substituents each of which is independently loweralkyl, loweralkoxy, halogen, trifluoromethyl, nitro or cyano and cycloalkyl has 3 to 7 carbon atoms; the geometrical isomers; optical antipodes; or pharmaceutically acceptable acid addition salts thereof.

8. A method of reducing blood pressure in mammals comprising administering to a mammal requiring blood pressure reduction, a blood pressure reducing effective amount of a compound as defined in claim 1.

4,800,201

1,4-THIAZINE DERIVATIVE, AND CARDIOTONIC AGENT COMPRISING IT AS EFFECTIVE COMPONENT

Muneaki Takase; Kimitomo Yoshioka, both of Tokyo, and Hiroaki Yamazaki, Ibaragi, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP85/00548, § 371 Date Jun. 3, 1986, § 102(e) Date Jun. 3, 1986, PCT Pub. No. WO86/02074, PCT Pub. Date Apr. 10, 1986

PCT Filed Oct. 3, 1985, Ser. No. 876,860

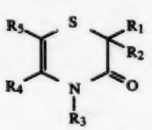
Claims priority, application Japan, Oct. 4, 1984, 59-208781; Mar. 28, 1985, 60-64679

The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/54*; C07D *279/12*

U.S. Cl. 514—230.8 **33 Claims**

23. A cardiotonic agent comprising a pharmaceutically acceptable excipient and an effective amount of a 1,4-thiazine derivative representated by the formula I or pharmaceutically acceptable acid addition salt thereof:



I

wherein

R_1 and R_2 represent respectively hydrogen atom, lower alkyl group, lower alkoxy group, unsubstituted amino group, lower alkyl-amino group, aryl-amino group, wherein the aryl-amino is one of phenyl-amino, tolyl-amino, xylyl-amino, mesityl-amino, cumenyl-amino or biphenyl-amino which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro or hydroxy, hydroxy group, aryl group wherein the aryl is one of phenyl, tolyl, xylyl, mesityl, cumenyl or bipheynyl which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro or hydroxy, or 5- or 6-membered heterocyclic residue; wherein the residue is furyl, thienyl, pyrrolyl, pyrano, pyridinyl, pyridazino, pyrimidino, piperidino, piperazino or morpholino;

R_3 and R_4 represent hydrogen atom or lower alkyl group; and

R_5 represents N-containing heterocyclic residue wherein said residue is one of pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, quinolinyl, iso-quinolinyl, cinnolinyl, quinazolinyl, quinoxalinyl, phthalazainyl, acridinyl, thiazolyl, piperidinyl, piperazinyl or morpholinyl which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro, hydroxy or lower alkoxycarbonyl, and is not pyridinyl group when R_1 and R_2 represent hydrogen atom and R_3 and R_4 represent hydrogen atom or lower alkyl group.

4,800,202

AMINOMETHYLTETRAHYDROFURANS, FUNGICIDAL COMPOSITIONS AND USE

Joachim Weissmüller, Monheim; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

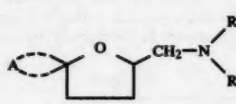
Filed Jan. 25, 1988, Ser. No. 147,416

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3703972; Sep. 11, 1987, 3730499

Int. Cl.[4] A01N *43/08, 43/84*; C07D *307/94, 413/06*

U.S. Cl. 514—227 **9 Claims**

1. An aminomethyltetrahydrofuran of the formula



(I)

in which

A represents a divalent alkylene or alkenylene chain which completes a mono or bicyclic ring system which is in each case optionally substituted and

R^1 and R^2 independently of one another each represent hydrogen, alkyl, alkenyl, alkinyl, alkoxyalkyl, dialkoxyalkyl, hydroxylalkyl, hydroxyalkoxyalkyl, dioxolanylalkyl, oxolanylalkyl, or dioxanylalkyl, or represent in each case optionally substituted cycloalkylalkyl, cycloalkyl, aralkyl, aralkenyl or aryl, or

R^1 and R^2, together with the nitrogen atom to which they are bonded, represent an optionally substituted saturated heterocyclic radical, which can optionally contain further heteroatoms,

or an acid addition salt thereof.

7. A fungicidal composition comprising a fungicidally effective amount of a compound or salt according to claim 1, and a diluent.

4,800,203

PYRROLO(1,2-B)CINNOLINES

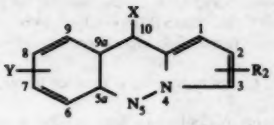
R. Russell Hamer, Far Hills; Richard C. Effland, and Joseph T. Klein, both of Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Sep. 24, 1987, Ser. No. 100,700

Int. Cl.[4] A61K *31/50*; C07D *487/04*

U.S. Cl. 514—248 **31 Claims**

1. A compound having the formula



R_1

where R_1 when presesnt is hydrogen, loweralkyl, aryllowerallkyl or $—CH_2CO_2C_2H_5$; R_2 is hydrogen, loweralkyl, arylloweralkyl, chlorine, bromine, iodine, formyl, nitro $—CH=CR_3R_4$ or $—CH_2CHR_3R_4$, R_3 and R_4 being independently hydrogen, loweralkyl, aryl or aryllowerallkyl; X is oygen, amino, loweralkylamino, aryllowerallkylamino or methoxy; and Y is hyrogen, fluorine, chorine, bromine, iodine, trifluoromethyl or nitro, the term aryl in each occurrence signifying a phenyl group having 0,1,2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, CF_3,NO_2 or CN; or a pharmaceutically acceptable acid addition salt thereof.

4,800,204

METHOD OF CONTROLLING TOBACCO USE

Peter S. Mueller, 182 Snowden La., Princeton, N.J. 08540

Continuation of Ser. No. 47,753, May 7, 1987, abandoned. This application May 5, 1988, Ser. No. 190,428

Int. Cl.[4] A61K *31/505*

U.S. Cl. 514—267 **18 Claims**

1. A method of controlling tobacco use in a human tobacco user who desires to reduce or stop tobacco use, which comprises administering to the user a pharmaceutically acceptable direct dopamine receptor agonist in an amount effective to control tobacco use.

4,800,205

FUNGICIDAL PYRIDYL SULFENYL CARBAMATES

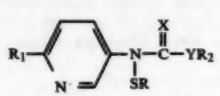
Don R. Baker, 15 Muth Dr., Orinda, Calif. 94563; Francis H. Walker, 302 Montford Ave., Mill Valley, Calif. (94941), and Keith H. Brownell, 4751 Elmhurst Dr., San Jose, Calif. 95129

Filed Oct. 29, 1987, Ser. No. 114,811

Int. Cl.[4] C07D *213/64, 213/75;* A01N *43/40*

U.S. Cl. 514—346 **7 Claims**

1. A compound having the structural formula



wherein

R is selected from the group consisting of C_1–C_3 haloalkyl, C_1–C_8 alkyl, phenyl, substituted phenyl wherein the substituents are selected from the group consisting of —Cl, $—NO_2$, C_1–C_4 alkanoyl, propylamino and methylbenzyl amino;

R_1 is C_1–C_3 alkoxy, C_1–C_3 haloalkoxy or halogen;

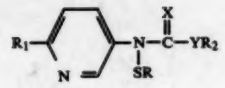
R_2 is C_1–C_3 alkyl;

X is oxygen or sulfur; and

Y is oxygen or sulfur

or fungicidally acceptable organic and inorganic salts thereof.

5. The method of controlling fungi comprising applying to the area where control is desired a fungicidally effective amount of a compound having the formula



wherein

R is selected from the group consisting of C_1–C_3 haloalkyl, C_1–C_8 alkyl, phenyl, substituted phenyl wherein the substituents are selected from the group consisting of —Cl, $—NO_2$, C_1–C_4 alkanoyl, propylamino and methylbenzyl amino;

R_1 is C_1–C_3 alkoxy, C_1–C_3 haloalkoxy or halogen;

R_2 is C_1–C_3 alkyl;

X is oxygen or sulfur; and

Y is oxygen or sulfur

or fungicidally acceptable organic and inorganic salts thereof.

4,800,206

PYRIDINE-ETHANOLAMINE DERIVATIVES

Leo Alig, Kaiserangst, and Marcel Müller, Frenkendorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

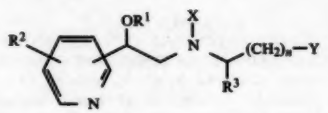
Filed Jun. 3, 1987, Ser. No. 57,150

Claims priority, application Switzerland, Jun. 27, 1986, 2608/86; Mar. 27, 1987, 1186/87

Int. Cl.[4] C07D *401/12;* A61K *31/44*

U.S. Cl. 514—332 **21 Claims**

1. A compound of the formula



I

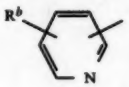
wherein

n is 1 or 2

X is a group X^a of the formula

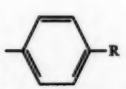
X^a

Z is a group of the formula



(Z^1)

Y is



R is lower alkyl, COR^4 or $C(R^5)$-$CHCOR^4$ or OR",

R" is hydrogen, lower-alkyl, lower-alkanoyl, $(CH_2)_{1-6}$—OH, $(CH_2)_{1-6}$—$O(CH_2)_{1-6}$—R^6 or $(CH_2)_{1-6}$—COR^4,

R^1 and R^a are hydrogen, lower-alkanoyl, benzoyl or $(CH_2)_{1-6}$—OH,

R^2 and R^b are hydrogen, Cl, Br or CF_3,

R^3 and R^5 are hydrogen or CH_3,

R^4 is hydroxy, lower-alkoxy or $N(R^7, R^8)$,

R^6 is hydrogen, Rg, OH or COR^4,

R^7 and R^8 are hydrogen or lower-alkyl,

R^8 is phenyl or phenyl substituted by Cl, F or Br,

an enantiomer, diastereomer or racemate thereof or a physiologically compatible salt thereof.

4,800,207

HEXAHYDROPYRROLIZINE COMPOUNDS USEFUL AS ANALGESICS

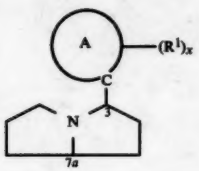
Richard J. Carmosin, Quakertown, and John R. Carson, Norristown, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Nov. 2, 1987, Ser. No. 115,960

Int. Cl.[4] C07D *487/02;* A61K *31/40*

U.S. Cl. 514—413 15 Claims

1. A hexahydropyrrolizine of the following formula (I):



(I)

wherein

A represents the atoms necessary to form a phenyl, naphthyl, cycloalkyl of 3 to 7 carbons, cycloalkenyl of 3 to 7 carbons, thienyl, furanyl or pyrrolyl ring system as the A-C cycle shown in formula (I);

R^1 is independently cyano, halogen, alkyl of 1 to 8 carbons, alkyloxy of 1 to 8 carbons, alkylthio of 1 to 8 carbons, haloalkyl of about 1 to 8 carbons, alkenyl of 2 to 8 carbons, alkynyl of 2 to 8 carbons, cycloalkenyl of 3 to 7 carbons or such an alkyl, alkenyl or alkynyl substituted by hydroxy; and

x is the integer 0, 1, 2, or 3,

provided that when A represents a phenyl ring, x is 1, 2 or 3, or a pharmaceutically-acceptable acid-addition salt thereof.

4,800,208

(BENZOFURAN-2-YL)IMIDAZOLES HAVING PHARMACEUTICAL ACTIVITY, THEIR SALTS AND RELEVANT PRODUCTION PROCESSES

Vittorio Pestellini; Mario Ghelardoni, both of Florence; Danilo Giannotti, Lucca; Alessandro Giolitti, Florence; Adriano Barzanti, Florence; Rossella Ciappi, Florence, and Carlo Ortolani, Riccione, Forlì, all of Italy, assignors to A. Menarini s.a.s., Italy

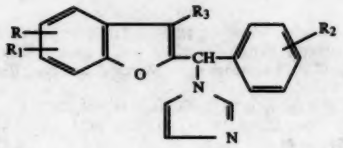
Filed Aug. 13, 1987, Ser. No. 85,067

Claims priority, application Italy, Aug. 13, 1986, 9461 A/86

Int. Cl.[4] A61K *31/34, 31/415;* C07D *403/06*

U.S. Cl. 514—397 6 Claims

6. Antifungal or antibacterial pharmaceutical composition, comprising an effective amount of at least one compound corresponding to the formula



I

wherein:

R and R_1, which may be the same or different, represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group having one to four carbon atoms, a nitro group, a cyano group, an amino group, or an acetamino group,

R_2 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group having one to four carbon atoms, a phenyl group, a phenylalkyl group, a phenylalkenyl group in which the alkenyl radical has two to four carbon atoms, a nitro group, a cyano group, an amino group, or an acetamino group, and

R_3 represents a hydrogen atom, an alkyl group having one to three carbon atoms, or a cyano group, alkyl unless otherwise specified having one to four carbon atoms

or a pharmaceutically acceptable salt thereof, as active ingredient, in combination with an inert carrier, in suitable form for administration by a method selected from the group consisting of oral, parenteral and topical administration.

4,800,209

METHOD OF ALLEVIATING WITHDRAWAL SYMPTOMS

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 821,668, Jan. 23, 1986, Pat. No. 4,670,459, which is a division of Ser. No. 657,288, Oct. 3, 1984, Pat. No. 4,575,510, which is a division of Ser. No. 467,553, Feb. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 330,528, Dec. 14, 1981, Pat. No. 4,382,946. This application May 18, 1987, Ser. No. 51,885

Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—401 3 Claims

1. A method of alleviating the adverse symptoms associated with drug-like withdrawal which comprises the administration of an anti-withdrawal effective amount of lofexidine or a pharmaceutical salt thereof to a patient suffering from pre-menstrual tension or peri-menopausal flushing.

4,800,210

Patent Not Issued For This Number

4,800,211
5-METHYLTHIO-3-HYDROXYBENZO [B]THIOPHENE-2-CARBOXAMIDE DERIVATIVES AS CYCLOOXYGENASE AND LIPOXYGENASE INHIBITORS

Allan N. Tischler, Westfield; Philippe L. Durette, New Providence; Bruce E. Witzel, Westfield, and Thomas J. Lanza, Jr., Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 18, 1986, Ser. No. 897,576
Int. Cl.[4] A61K *31/38*; C07D *333/70*
U.S. Cl. 514—443 6 Claims

1. The compound which is N-(3-chlorophenyl)-3-hydroxy-5-methylthiobenzo [b]thiophene-2-carboxamide or a pharmaceutically acceptable salt thereof.

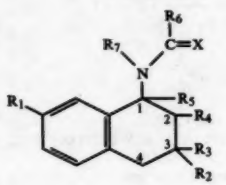
3. A method of treating a disease selected from the group consisting of arthritic conditions and immediate hypersensitivity reaction comprising the administration to a subject in need of such treatment a non-toxic effective amount of compound according to claim 1.

4,800,212
PYRROLIDONE-2 COMPOUNDS AND ANTI-HYPERTENSIVE USE THEREOF

John M. Evans, Roydon, and Geoffrey Stemp, Harlow, both of England, assignors to Beecham Group p.l.c., England

Filed Jun. 10, 1985, Ser. No. 742,798
Claims priority, application United Kingdom, Jun. 12, 1984, 8414987
Int. Cl.[4] C07D *207/27, 211/76*; A61K *31/40, 31/435*
U.S. Cl. 514—424 8 Claims

1. A compound of formula (I) or when the compound of formula (I) contains a salifiable group, a pharmaceutically acceptable salt thereof:



(I)

wherein:

R_1 is C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkylthiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, 1-mercapto-C_{2-7} alkyl, formyl, or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino, C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino, or ethylenyl terminally substituted by C_{1-6} alkyl carbonyl, nitro or cyano;

one of R_2 and R_3 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_4 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy and R_5 is hydrogen or R_4 and R_5 together are a bond;

R_6 and R_7 together are CH_2-$(CH_2)_n$-Z-(CH_2)m— wherein m and n are 0 to 2 such that m+n is 1 or 2 and Z is CH_2;

X is oxygen or sulphur;

the nitrogen-containing group in the 1-position being trans to the R_4 group when R_4 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy.

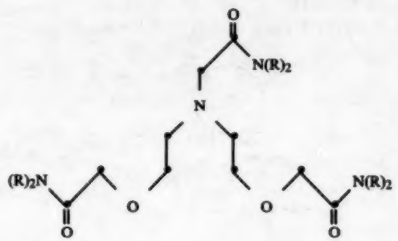
8. A method of treatment of hypertension in mammals which comprises administering to the suffering mammal an antihypertensive amount of a compound according to claim 1 or a pharmaceutically salt thereof.

4,800,213
NOVEL DIETHANOLAMINE TRIACETIC ACID TRIAMIDES AND METHODS FOR IMPROVING FEED UTILIZATION AND LACTATION IN RUMINANT ANIMALS

Alan W. White, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1987, Ser. No. 81,064
Int. Cl.[4] A61K *31/16*; C07C *103/50*
U.S. Cl. 514—616 7 Claims

1. A method for increasing the efficiency of feed utilization by ruminant animals comprising administering to said animals an effective amount of one or more compounds having the formula:



wherein each R may be the same or different and represents a straight or branched chain alkyl group of one to six carbon atoms,

or the physiologically acceptable salts thereof.

4,800,214
OPEN CELL BODY MADE OF HARD VINYL CHLORIDE RESIN

Tatsuo Waki; Takeshi Watanabe, and Kazuo Suzuki, all of Ibaraki, Japan, assignors to Lonseal Corporation, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 107,029
Claims priority, application Japan, Oct. 21, 1986, 61-251325
Int. Cl.[4] C08J *9/10*
U.S. Cl. 521—84.1 50 Claims

1. An open cell body made of hard vinyl chloride resin having a composition consisting essentially of:

(1) a vinyl chloride resin,

(2) an ultramacromolecular weight acrylic resin processing aid having a molecular weight of at least about 1,500,000,

(3) a stabilizer selected from the group consisting of a mixture of a first organic stabilizer containing a metal of the group I in the periodic table, a second organic stabilizer containing a metal of the group II in the periodic table, and a composite organic stabilizer containing a metal from group I and a metal from group II of the periodic table,

(4) a surface active agent selected from the group consisting of a mixture of an anionic surface active agent and a nonionic surface active agent, and a mixture of an anionic surface agent and a member selected from the group consisting of low polymerization degree polyolefins and waxes, and

(5) a blowing agent.

4,800,215

COMPOSITIONS PREPARED FROM DIALKANOLAMINES AND TRIGLYCIDYL ETHERS OF TRISPHENOLS

James L. Bertram, Lake Jackson; Willie L. Myles, Brazoria, both of Tex., and Michael P. Kubisiak, Hayward, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 918,421, Oct. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 515,757, Jul. 21, 1983, abandoned. This application Mar. 18, 1988, Ser. No. 170,217

Int. Cl.[4] C08L 63/00; C08G 63/76, 8/28, 65/08

U.S. Cl. 523—414 20 Claims

1. An uncured, water soluble or water miscible adduct prepared by reacting (1) at least one polyglycidyl ether of a tris(hydroxyphenyl)alkane and/or an oxazolidinone modified derivative thereof with (2) at least one dialkanolamine in quantities which provide a ratio of moles of dialkanolamine to equivalents of epoxy groups of from about 0.85:1 to about 1.1:1.

4,800,216

ABS MOLDING COMPOSITIONS OF REDUCED RESIDUAL BUTADIENE CONTENT

Herbert Eichenauer, Dormagen, and Alfred Pischtschan, Kuerten, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

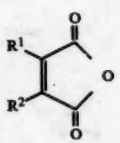
Filed Nov. 2, 1987, Ser. No. 115,387

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1986, 3638704

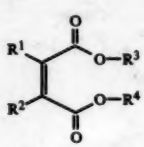
Int. Cl.[4] C08L 55/02

U.S. Cl. 525—285 5 Claims

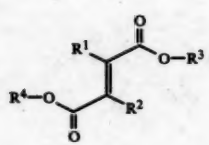
1. Thermoplastic molding compositions comprising 100 parts by weight of an ABS polymer and from 0.05 to 2.0 parts by weight of a compound corresponding to general formula A, B or C or mixtures thereof



A



B



C

in which

R^1 and R^2 independently of one another represent H, or C_1–C_4 alkyl,

R^3 and R^4 independently of one another represent H, C_1–C_8 alkyl, C_7–C_{10} alkaryl, C_7–C_{10} aralkyl, or phenyl,

and the ABS polymer is 5 to 100% by weight of a graft copolymer and 95 to 0% by weight of a thermoplastic copolymer resin wherein the graft copolymer is a 10 to 95% by weight of a butadiene-containing rubber having a gross transition temperature of 10° C. or less onto which is grafted 90 to 5% by weight of graft monomers which are styrene or methyl methacrylate or a mixture of from 95 to 50% by weight styrene, α-methyl styrene, nucleus-substituted styrene, methyl methacrylate or mixtures thereof and from 5 to 50% by weight acrylonitrile, methacrylonitrile, maleic acid anhydride, N-substituted maleic imides or mixtures thereof and the thermoplastic resin is a polymer of one or more monomers selected from said graft monomers or mixtures thereof.

4,800,217

PAINT DETACKIFICATION

Charles R. Kiss, Asstabula, Ohio, and Shu-Jen W. Huang, Schaumburg, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 62,526, Jun. 12, 1987, Pat. No. 4,764,561. This application Jan. 21, 1988, Ser. No. 146,633

Int. Cl.[4] C08F 82/80; C08L 31/00, 33/00, 35/00

U.S. Cl. 525—163 1 Claim

1. A paint spray booth detackifying mixture comprising melamine-formaldehyde polymer and styrene acrylate polymer in a mole ratio within the range of 2:1 to 4:1 respectively wherein said molecular weight of said melamine-formaldehyde is within the range of 2,500 to 4,000 and the molecular weight of said styrene acrylate polymer is with the range of 50,000 to 100,000.

4,800,218

FUNCTIONALIZED THERMOPLASTIC POLYMERS, BLENDS PREPARED THEREFROM, AND METHODS FOR PREPARING BLENDS

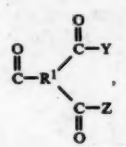
Susan J. Hathaway, Schenectady, N.Y., and Robert A. Pyles, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 939,391, Dec. 8, 1986, Pat. No. 4,732,934. This application Nov. 5, 1987, Ser. No. 117,001

Int. Cl.[4] C08L 69/00

U.S. Cl. 525—433 8 Claims

1. A thermoplastic polymer having recurring carbonate units in the main chain and end groups of the formula



wherein

R^1 is a trivalent group selected from the group consisting of aliphatic chains containing about 2–20 carbon atoms and aromatic groups containing about 6–20 carbon atoms; and

Y and Z are individually selected from the group consisting of hydroxy and alkoxy groups, and when taken together are oxygen.

4,800,219

POLYLACTIDE COMPOSITIONS

Joseph R. Murdoch, Wilmington, Del., and Gary L. Loomis, Drexel Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 108,531, Oct. 15, 1987, Pat. No. 4,766,182, which is a division of Ser. No. 944,588, Dec. 22, 1986, Pat. No. 4,719,246. This application Apr. 28, 1988, Ser. No. 187,350

Int. Cl.[4] C08G 63/76

U.S. Cl. 525—413 18 Claims

1. A polymeric composition comprising segments of poly(R-lactide) interlocked with segments of poly(S-lactide).

4,800,220

CROSSLINKED CARBOXYLIC COPOLYMERS USABLE AS THICKENERS IN AQUEOUS MEDIA AND PREPARATION THEREOF

Alain Ribba, Crotelles, France, assignor to Manufacture de Produits Chimiques Protex, Paris, France

PCT No. PCT/FR87/00072, § 371 Date Nov. 2, 1987, § 102(e) Date Nov. 2, 1987, PCT Pub. No. WO87/05611, PCT Pub. Date Sep. 24, 1987

PCT Filed Mar. 13, 1987, Ser. No. 124,945

Claims priority, application France, Mar. 14, 1986, 86 03655

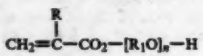
Int. Cl.[4] C08F 1/00, 34/02

U.S. Cl. 526—238.23 15 Claims

1. Crosslinked carboxylic colpolymers obtained by copolymerizing the following monomers in the indicated proportions by weight:

(a) from 50 to 95% of at least one olefinically unsaturated carboxylic acid monomer,

(b) from 5 to 25% of at least one ester of acrylic or methacrylic acid with a polyalkylene glycol having the general formula:



in which

R is H or CH_3,

R_1 is a divalent alkylene group containing from 2 to 6 carbon atoms inclusive, and

n is an integer from 2 to 25, and

(c) from 0.1 to 5% of at least one crosslinking agent chosen from unsaturated monomers containing at least two vinyl end groups $CH_2{=}C<$; as well as the products obtained by neutralizing at least partially said copolymers with an organic or inorganic base.

4,800,221

SILICON CARBIDE PRECERAMIC POLYMERS

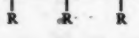
Ollie W. Marko, Carrollton, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 25, 1987, Ser. No. 89,119

Int. Cl.[4] C08G 77/00

U.S. Cl. 528—10 26 Claims

1. A preceramic polymer composed of



units where there are present 0 to 25 mole percent [R_2Si] units and 75 to 100 mole percent [$R_2SiC{=}CSiR_2$] units and where each R is independently selected from the group consisting of hydrogen, alkyl radicals containing 1 to 8 carbon atoms, phenyl radicals, and vinyl radicals.

4,800,222

ACCELERATOR FOR CURING EPOXY RESINS COMPRISING PIPERAZINE, TRIETHANOLAMINE AND TRIS(DIMETHYLAMINOMETHYL)PHENOL

Harold G. Waddill, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 24, 1987, Ser. No. 88,329

Int. Cl.[4] C08G 59/62, 59/64, 59/68

U.S. Cl. 528—94 1 Claim

1. A composition comprising an epoxy resin and an accelerator comprising: 50 to 60 parts by weight triethanolamine, 20 to 30 parts by weight tris(dimethylaminomethyl)phenol and the balance piperazine.

4,800,223

QUINOXALINONE DERIVATIVES AND ANALYTICAL METHOD USING SAID COMPOUNDS

Yosuke Ohkura, Fukuoka, Japan, assignor to Tosoh Corporation, Tokyo, Japan

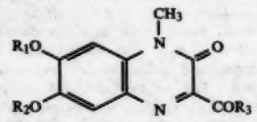
Filed Mar. 11, 1987, Ser. No. 24,420

Claims priority, application Japan, Mar. 11, 1986, 61-51488

Int. Cl.[4] C07D 241/44; G01N 33/52, 30/02, 21/64

U.S. Cl. 544—354 2 Claims

1. A compound of the following formula:



where R_1 and R_2 are each methyl, ethyl or propyl; and R_3 is a chlorine atom or azide.

4,800,224

OPTICALLY ACTIVE STYRENE DERIVATIVES, POLYMERS OBTAINED FROM THESE, COMPLEXES WITH IRIDIUM(I) AND THEIR USE

Jürgen Kaschig, Freiburg, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

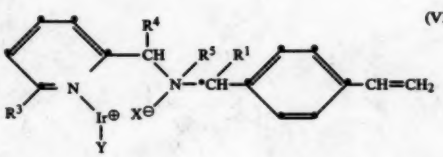
Filed May 8, 1987, Ser. No. 47,099

Claims priority, application Switzerland, May 16, 1986, 1985/86

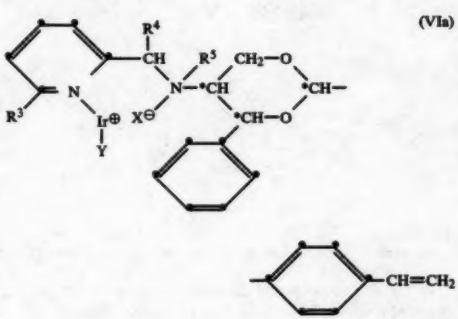
Int. Cl.[4] C07F 15/00; C07D 407/12, 213/89, 213/38

U.S. Cl. 546—12 8 Claims

1. An iridium complex which corresponds to the formula VI or VIa



(VI)



(VIa)

in which * represents predominantly R or predominantly S configuration, R^1 is C_1–C_4-alkyl, phenyl or benzyl, R^3 is H or —CH_3, R^4 and R^5 are each H or together form a bond, $X^{\ominus}$ is the anion of a monobasic inorganic or organic acid and Y is an open-chain or cyclic diene having 6 to 10 C atoms, whose double bonds are separated by 1 or 2 C atoms.

4,800,225

PHARMACOLOGICALLY ACTIVE HYDRATED AZABICYCLO COMPOUND

Paul Smith, Harlow, England, assignor to Beecham Group, p.l.c., Brentford, England

Filed Mar. 20, 1987, Ser. No. 28,256
Claims priority, application United Kingdom, Mar. 22, 1986, 8607163
Int. Cl.[4] C07D 471/08
U.S. Cl. 546—112 6 Claims

1. (±)endo-4-Amino-5-chloro-2-methoxy-N-(1'-azabicyclo-[3.3.1]non-4'-yl)benzamide, hydrochloride salt hydrate.

4,800,226

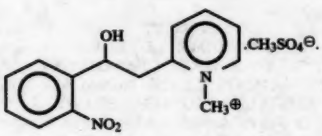
PROCESS INTERMEDIATE FOR THE PREPARATION OF ENCAINIDE

John L. Dillon, Clay, and Richard H. Spector, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 833,295, Feb. 25, 1986, Pat. No. 4,675,409. This application Apr. 20, 1987, Ser. No. 39,847
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] C07D 213/02
U.S. Cl. 546—338 1 Claim

1. 1-(2-nitrophenyl)-2-[2-(1-methyl) pyridinium methyl sulfate]-ethanol (IV)

IV



4,800,227

PROCESS FOR THE PRODUCTION OF LACTAMS

Michael S. Matson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 20, 1984, Ser. No. 642,011
Int. Cl.[4] C07D 201/08
U.S. Cl. 548—543 19 Claims

1. A process for producing a lactam comprising contacting a feedstock selected from the group consisting of acid anhydrides, dicarboxylic acids, lactones, and imides, said feedstock having 4 to 6 carbon atoms in the backbone with a catalyst system comprising palladium and at least one second metal selected from the group consisting of ruthenium, rhodium and rhenium under conditions to convert at least a portion of the feedstock to the lactam.

4,800,228

4,7-DIACETOXY-2-(4-METHOXYBENZYL)-3,5,6-TRIMETHYLBENZOFURAN

Julian Adams, Westmount, and Yvan Guindon, Montreal, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Jun. 18, 1987, Ser. No. 64,269
Int. Cl.[4] C07D 307/86
U.S. Cl. 549—470 1 Claim

1. A compound which is: 4,7-diacetoxy-2-(4-methoxybenzyl)-3,5,6-trimethylbenzofuran.

4,800,229

PHOSPHATED ACRYLATES OF ALKOXYLATED ALCOHOLS

John G. Papalos, Ledgewood, N.J., assignor to Diamond Shamrock Chemical Company, Dallas, Tex.

Continuation of Ser. No. 844,978, Mar. 27, 1986, abandoned.
This application Jan. 12, 1988, Ser. No. 144,701
Int. Cl.[4] C07F 9/09
U.S. Cl. 558—92 8 Claims

1. A process for preparing phosphated acrylate of condensates of alcohol and alkylene oxide having at least two hydroxyl groups comprising esterifying a condensate of one mole of at least one alcohol having at least two carbon atoms and at least two hydroxyl groups with from about one to about ten moles of at least one alkylene oxide having from two to four carbon atoms per hydroxyl group of said alcohol,

A. with sufficient phosphorus oxychloride to partially esterify at about 20 deg. C. to about 150 deg. C. at least 20% to about 80% of hydroxyl groups of said condensate and then at least one ultraviolet or electron beam curable anionic vinyl monomer sufficient to esterify at about 60 deg. C. to about 180 deg. C. the balance of said hydroxyl groups, or

B. with at least one ultraviolet or electron beam curable anionic vinyl monomer sufficient to partially esterify at about 60 deg. C. to about 180 deg. C. at least about 20% to about 80% of hydroxyl groups of

said condensate and then sufficient phosphorus oxychloride to esterify at about 20 deg. C. to about 150 deg. C. the balance of said hydroxyl groups.

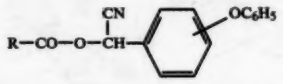
4,800,230

PREPARATION OF ALPHA-CYANO-PHENOXYBENZYL ESTERS

Jerry M. Roper, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

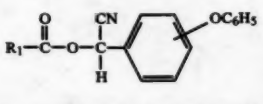
Filed Jun. 30, 1986, Ser. No. 880,039
Int. Cl.[4] C07C 61/04, 121/52
U.S. Cl. 558—388 7 Claims

1. A process for the preparation of an alpha-cyano-phenoxybenzyl ester of the formula:



in which an acid halide of the formula:

in which R is an optionally substituted cyclopropyl group or an optionally substituted benzyl group and X is fluorine, chlorine or bromine is reacted with an ester of an alpha-cyano-phenoxybenzyl alcohol of the formula:



in which R_1 is a straight chain or branched chain alkyl group containing from 1 to 6 carbon atoms in the presence of an inert polar aprotic solvent and a transition metal alkoxide catalyst.

4,800,231

KETO-DIESTERS PRODUCTION

Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 23, 1988, Ser. No. 171,999
Int. Cl.[4] C07C 67/313
U.S. Cl. 560—176 8 Claims

1. A process for the production of keto-diesters by reacting a lower alkyl ester of a 2-alkenoic acid and an aldehyde having two hydrogen atoms present as part of a formyl group, in the presence of a thiazolium salt and a trialkylamine, in liquid phase solution.

4,800,232

PROCESS FOR PRODUCING TRIAMINOGUANIDINE NITRATE AND THE HIGH MELTING POINT PRODUCT SO PRODUCED

Eugene F. Rothgery, North Branford, and Steven A. Manke, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 16, 1987, Ser. No. 109,010
Int. Cl.[4] C07C 133/10
U.S. Cl. 564—227 3 Claims

1. A process for producing triaminoguanidine nitrate by a reaction of an aqueous mixture of cyanamide, hydrazine nitrate, and hydrazine in a molar ratio of between about 1:2:1 and about 1:4:4 to provide a product having a melting point of at least 220° C.

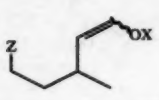
4,800,233

CYCLOALIPHATIC ALDEHYDES AND PROCESS FOR THE PREPARATION THEREOF

Dana P. Simmons, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

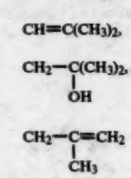
Filed Aug. 3, 1987, Ser. No. 81,267
Claims priority, application Switzerland, Aug. 6, 1986, 3154/86
Int. Cl.[4] C07C 45/45
U.S. Cl. 568—447 7 Claims

1. Process for the preparation of dihydrocyclocitral which comprises cyclising by means of an acidic cyclisation agent an enol ester of formula



(I)

wherein the wavy line stands for a C—O bond of cis or trans configuration, X represents an acyl radical or $P(O)(OR)_2$, R being a lower alkyl monovalent radical or an aryl and Z represents a monovalent radical of formula



4,800,234

SYNTHESIS OF 1,1,2,2-TETRAHYDROPERFLUOROALKANOLS AND THEIR ESTERS

André Lantz, Vernaison, and Pascal Michaud, La Mulatiere, both of France, assignors to Societe ATOCHEM, Puteaux, France

Filed Dec. 4, 1987, Ser. No. 128,915
Claims priority, application France, Dec. 22, 1986, 86 17984
Int. Cl.[4] C07C 31/38
U.S. Cl. 568—842 4 Claims

1. A process for the preparation of 1,1,2,2-tetrahydroperfluoroalkanols and their esters, comprising oxidizing a 2-(perfluoroalkyl)ethyl iodide using peroxomonosulphuric acid or peroxodisulphuric acid in a carboxylic acid or an ester of such an acid.

4,800,235

SYNERGISTIC BIOCIDE OF 1,5-PENTANEDIAL AND A MIXTURE OF N-ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE AND N-DIALKYL METHYL BENZYL AMMONIUM CHLORIDE

Thomas M. La Marre, Aurora, and Cynthia H. Martin, Plainfield, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 770,048, Aug. 28, 1985, abandoned. This application Jun. 13, 1986, Ser. No. 873,915
Int. Cl.[4] A01N 33/12, 35/00
U.S. Cl. 514—643 5 Claims

1. A synergistic biocidal composition useful in treating industrial process waters to prevent the growth of gram-negative bacteria and fungi which comprises from 10–90% by weight of 1,5-pentanedial and from 90–10% by weight of a mixture comprising:

(a) N-alkyl dimethyl benzyl ammonium chloride and

(b) N-dialkyl methyl benzyl ammonium chloride, wherein the ratio of (a) to (b) is within the range of 10:1 to 1:10 and the alkyl group contains between 12–20 carbon atoms in chain length.

ELECTRICAL

4,800,236

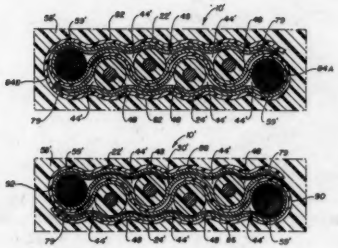
CABLE HAVING A CORRUGATED SEPTUM

Timothy A. Lemke, Carlisle, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 892,300, Aug. 4, 1986, abandoned. This application Jul. 8, 1987, Ser. No. 67,767

Int. Cl.[4] H01B 7/08, 13/22

U.S. Cl. 174—36 **16 Claims**



1. A cable comprising:

a corrugated member having a first and a second longitudinal edge thereon and opposed surfaces thereon, each surface having an open groove formed therein, a conductive layer being disposed in each of the grooves, the conductive layers being in electrical contact with each other, the corrugated member being substantially planar in configuration,

an electrical conductor disposed in each of the grooves, each conductor having a central axis extending therethrough, the axes of the conductors lying on a common, substantially linear, locus,

the corrugated member having a first and a second flap integrally formed along each respective longitudinal edge thereof,

a first and a second substantially planar conductive member respectively disposed on each of the flaps,

the flaps being foldable to overlie a respective surface of the corrugated member thereby to dispose each conductive member into contact with its respective conductive layer to close an open groove on each surface of the corrugated member and thereby to define an enclosed tubular envelope receiving each conductor along its entire axial length,

the conductive members and the conductive layers being, in use, at a predetermined electrical potential such that each conductor in each envelope is substantially totally electromagnetically isolated along its entire axial length.

15. A method of forming a cable comprising the steps of:

(a) laying a first and a second array of conductors on opposite sides of a metallic strip, a predetermined lateral spacing being defined between the conductors in each array;

(b) compressing the conductors in each array toward the strip such that a corrugated structure is formed with the axes of the conductors lying on a substantially linear locus;

(c) folding the strip along a first fold line substantially parallel to the axes of the conductors to overlay the strip over the first array of conductors; and

(d) folding the strip along a second, spaced, fold line substantially parallel to the axes of the conductors to overlay the strip over the second array of conductors.

4,800,237

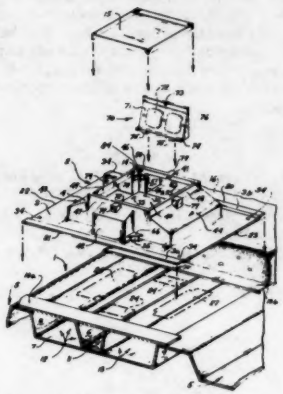
MULTI-SERVICE PRESET ACCESS UNIT FOR CELLULAR RACEWAY

Gregory L. Mohr, Mineral Wells, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Mar. 11, 1983, Ser. No. 474,696

Int. Cl.[4] H02G 3/18

U.S. Cl. 174—48 **12 Claims**



1. A preset access unit for a floor having cellular raceway means with crests thereof being co-planar, the cellular raceway means being buried in concrete, the unit including a base extending generally horizontally and a housing extending upwardly therefrom, the base adapted to position the unit over the cellular raceway means with the housing buried in the concrete:

said base being flat and formed as a unitary stamped steel piece;

said housing being formed as a unitary die cast piece and including:

(a) a main section having a side wall connected to the base and extending upwardly and providing a hollow interior structure, the side wall terminating in a top portion forming an access opening providing access to the interior of the main section, said side wall being comprised of a pair of power walls and a pair of communication walls respectively arranged whereby the main section, in plan, is in the form of a rectangle;

(b) a pair of hollow power sections respectively connected to said pair of power walls and to said base and each having a power opening open to said interior, the power sections being disposed in positions generally opposite one another and extending outwardly from the main section with the respective power openings facing one another and each power section being dimensioned to receive a power receptacle to extend across its power opening for access from the main section;

(c) a pair of hollow communication sections respectively connected to said base and to said pair of communication walls and each having a communications opening open to said interior, the communication sections being disposed in positions generally opposite one another and between said power sections and extending outwardly from the main section with the respective communications openings facing one another and each communication section being dimensioned to store a telephone amphenol connector; and

(d) each of said hollow power sections and each of said hollow communication sections having a top wall which is angularly oriented to extend in a direction downwardly from the main section toward the base and

the point of connection between the top wall and the side wall being substantially below the top edge of the side wall;

a pair of power apertures formed in said base respectively open to said hollow power section, portions of said power apertures respectively extending inboard of said power walls;

a pair of communication apertures formed in said base respectively open to said hollow communication sections, portions of said communication apertures respectively extending inboard of said communication walls; and said power and communication openings, said hollow power and communication sections, and said power and communication apertures formed in said base providing passageways to the cellular raceway means over which the unit is positioned.

4,800,238

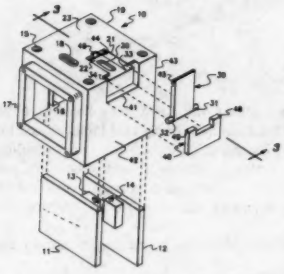
HOUSING WITH IMPROVED ADJUSTMENT ACCESS SEALING ARRANGEMENT

George Gesvent, Rock City, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1987, Ser. No. 118,921

Int. Cl.[4] H05K *5/03*

U.S. Cl. 174—52.1 **11 Claims**



1. In a device of the type including a hollow housing having an access port through a first wall of the housing and cover means for reopenably sealing the access port, the improvement which comprises:

a cover having a laterally oriented pivot portion supported by said housing: and

a retainer, said retainer and said housing cooperatively defining a recess configured to hold the pivot portion of said cover captive when said retainer is in place, said housing and said retainer being formed of a first ultrasonically weldable material and being ultrasonically welded together, the cover being formed of a second material not susceptible of being ultrasonically welded to the first material, said housing and said cover being provided with means for releasably holding said cover in a position to seal the access port.

4,800,239

DECORATIVE SWITCH PLATE AND RECEPTACLE WALL PLATE

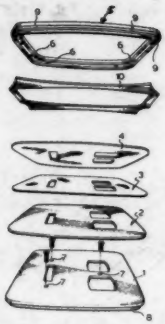
D. James Hill, Medford, N.J., assignor to Vanguard-Hill, Inc., Wilmington, Del.

Filed May 4, 1987, Ser. No. 45,461

Int. Cl.[4] H02G *3/14*

U.S. Cl. 174—66 **7 Claims**

1. A wallpaper assembly for mounting on electrical switch assemblies and receptacle assemblies comprising a baseplate with means for attachment to an electric switch assembly or receptacle assembly, said baseplate having a continuous recess around its rear surface perimeter forming a lip or flange at its front surface perimeter with openings for electrical switch lever or levers and/or outlet or outlets, decorated decor plate and transparent shield of the same size and shape as the baseplate but with no visible means for direct attachment to the



electrical switch or receptacle, and a decorative trim frame with means operative to enclose and surround the baseplate flange and perimeter edges of the decorative and protective plates.

4,800,240

DEVICE FOR DETECTING THE DISPLACEMENT OF A WRITING IMPLEMENT

Louis Béchet, Douvaine, France, assignor to Battelle Memorial Institute, Switzerland

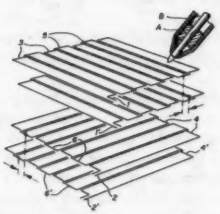
PCT No. PCT/CH86/00127, § 371 Date May 7, 1987, § 102(e) Date May 7, 1987, PCT Pub. No. WO87/01842, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 9, 1986, Ser. No. 57,059

Claims priority, application Switzerland, Sep. 11, 1985, 3925/85

Int. Cl.[4] G08C *21/00*

U.S. Cl. 178—18 **3 Claims**



1. A device for detecting the displacement of a writing implement from a proximity threshold determined relative to a writing surface, this instrument having close to its writing tip a permanent magnet of which the magnetisation is orientated so as to be generally parallel to the longitudinal axis of the said instrument and symmetrically about this axis, the device comprising, subjacent to the writing surface, at least two electric conductors in series extending parallel to the writing plane, characterised in that each of the conductors forms a series of extended parallel loops open alternately at their opposite ends, the major axes of the loops of one conductor being perpendicular to the major axes of the loops of the other conductor, the width of the loops being selected so as to be substantially equal to the diameter of the flux of the said permanent magnet when the said writing implement is, at the most, a given distance from the said writing surface, so that the displacement of this instrument induces at the terminals of these conductors peri-

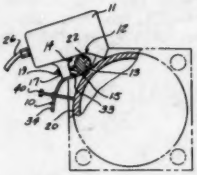
odic voltage variations which are greater than a given threshold, a detector of the said threshold being designed to emit a command signal as soon as the periodic voltage exceeds this threshold.

4,800,241

PROXIMITY SWITCH MOUNTING PLATE

James A. McNamara, Willowdale, Canada, assignor to Allied Automation Systems, Inc., Detroit, Mich.

Filed Nov. 16, 1987, Ser. No. 121,333
Int. Cl.[4] H01H *35/38*
U.S. Cl. 200—82 E **4 Claims**



1. A mounting plate mounted to a proximity switch which senses the position of a piston within a fluid operated, expansible chamber cylinder, said proximity switch being provided with a retaining channel formed on a side thereof and engaged with a tie-rod extending between heads secured to each end of the cylinder and a plurality of externally threaded first fastening devices engageable with a plurality of threaded bores formed therein and extending through the rear adjusting surface of the retaining channel, wherein the proximity switch is positioned with respect to the cylinder by engaging the fastening devices with the tie-rod in the channel, the mounting plate comprising:

a flat portion having two tabs formed adjacent opposite edges thereof, said tabs abutting the end of the rear adjusting surface of the retaining channel;

an arcuate portion adjoining the flat portion having means forming an aperture therein;

a second fastening device threaded through the aperture, wherein the acruate portion is aligned coaxially with respect to and spaced apart from the surface of the cylinder and the proximity switch is positioned with respect to the cylinder by engagement of the tie-rod in the channel, the second fastening device abuts the surface of the cylinder thereby preventing dislodgement of the proximity switch with respect to the cylinder.

4,800,242

SPRING-POWERED DRIVE ASSEMBLY FOR OPENING AND CLOSING A SWITCH

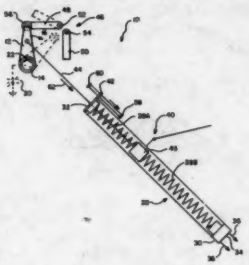
Simon Yin, Fremont, Calif., assignor to Square D Research, Palatine, Ill.

Filed Sep. 10, 1987, Ser. No. 95,417
Int. Cl.[4] H01H *5/06*
U.S. Cl. 200—400 RS **11 Claims**

1. A spring-powered drive assembly for opening and closing a switch such as one forming part of a high voltage switch gear apparatus, said drive assembly comprising:

(a) first means adapted for connection with said switch and movable from a first position to a second position in response to a certain minimum force applied to said first means in one direction, whereby to open said switch, and from said second position to said first position in response to a certain minimum force applied to said first means in an opposite direction, whereby to close said switch; and

(b) second means for moving said first means between said first and second positions for opening and closing said switch, said second means including a single straight coil spring for applying said minimum force to said first means in both of said directions, whereby the same single coil is used to open and close said switch, said second means including spring activating means for first charging said spring by placing it in a way which places certain sections of the spring partially in compression and partially in tension and thereafter simultaneously discharges said



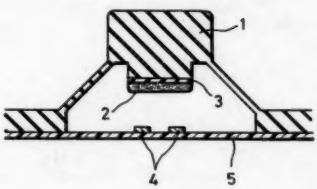
charged spring sections in one predetermined way in order to apply said minimum force to said first means in said one direction and thereby open said switch and in a second predetermined way in order to apply said minimum force to said first means in said opposite direction and thereby close said switch.

4,800,243

CONTACTOR RUBBER

Yasuhisa Osawa, Kawaguchi, and Yasuko Kimura, Tokyo, both of Japan, assignors to Fuji Rubber Co. Limited, Japan

PCT No. PCT/JP86/00419, § 371 Date May 8, 1987, § 102(e) Date May 8, 1987, PCT Pub. No. WO87/01235, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 14, 1986, Ser. No. 43,560
Int. Cl.[4] H01H *1/02*
U.S. Cl. 200—514 **4 Claims**



1. A rubber structure contact connector, comprising a support having an electrical contact, an insulating rubber portion overlying said contact on said support and having a raised dome-shaped resilient compressible portion with an interior face and an opposite exterior face, said opposite exterior face being formed as a key, said interior face of said compressible portion having an oil-resistant layer thereon, and a conductive portion overlying said oil-resistant layer aligned over said electrical contact.

4,800,244

PRESSURE SWITCH

Masaru Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Division of Ser. No. 662,890, Oct. 19, 1984. This application Oct. 4, 1985, Ser. No. 784,468

Claims priority, application Japan, Oct. 21, 1983, 58-197965; Oct. 24, 1983, 58-164188[U]; Oct. 24, 1983, 58-164189[U]

Int. Cl.[4] H01H *9/02, 9/04*

U.S. Cl. 200—306 3 Claims

1. A switch cover for a switch body having a lead wire extending outside of the switch from a connection terminal portion comprising:

a molded cover body of a macro-molecular material deformably resistant in response to temperature and pressure changes outside of the switch, said cover body being provided on the switch to cover the connection terminal portion of the switch body, said cover body having a lead-out portion for allowing the switch lead wire to pass therethrough;

a vent hole formed in said cover body to cause the inside of said cover body to communicate with the outside;

a thin, flexible film disposed to cover said vent hole, said film having characteristics of gas permeability and waterproofness, said film having opposed surfaces; and

means for integrating said film with said molded cover body when said cover body is molded,

and two rigid holders supporting said film, each rigid holder extending over said vent hole to support one of said opposed film surfaces.

4,800,245

KEY MODULE FOR KEY-ACTUATED MEMBRANE SWITCH PANELS

Gunter Murmann, Pegnitz, and Walter H. Mertel, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Cherry-Mikroschalter GmbH, Auerbach, Fed. Rep. of Germany

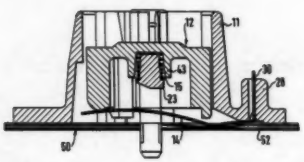
PCT No. PCT/EP86/00453, § 371 Date Mar. 9, 1987, § 102(e) Date Mar. 9, 1987, PCT Pub. No. WO87/01236, PCT Pub. Date Feb. 26, 1987

PCT Filed Jul. 31, 1986, Ser. No. 23,119

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3530050

Int. Cl.[4] H01H *13/70*

U.S. Cl. 200—345 27 Claims



1. A key module adapted for use with a key-actuated membrane switch panel, said module comprising:

(a) a key housing comprising a base portion and a body portion;

(b) a plunger slidably disposed within said key housing; and

(c) spring means secured within said base portion of said key housing, said spring means comprising a substantially flat spring which includes an upwardly bent portion and a substantially flat portion;

wherein said base portion includes a vertical shoulder, said shoulder comprising a vertically extending slot for accommodating said upwardly bent portion of said spring therein, said slot having an open top end so as to comprise means for receiving a tool for adjusting said spring.

4,800,246

DEVICE FOR PROTECTING THE TURNTABLE SHAFT OF MICROWAVE OVENS FROM THE CONCENTRATION OF MICROWAVES

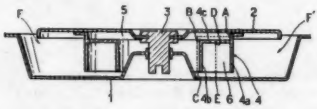
Eon H. Lee, and Seok W. Chin, both of Busan, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1987, Ser. No. 113,476

Claims priority, application Rep. of Korea, Oct. 28, 1986, 9049/1986

Int. Cl.[4] H05B *6/78*

U.S. Cl. 219—10.55 F 7 Claims



1. In a microwave oven having a heating chamber, a base plate and a turntable mounted on a turntable shaft, the turntable shaft being rotatably mounted on the baseplate and being constructed of a resinous material, a device for protecting the turntable shaft comprising:

protection means connected to the turntable, for preventing microwaves from concentrating around the turntable shaft;

said protection means including,

a choke cavity having a first inlet, said first inlet having a minimum impedance, with respect to the microwaves, thereby reflecting the microwaves at said first inlet, and

a supplemental cavity having a second inlet, said second inlet having a maximum impedance with respect to the microwaves, thereby absorbing the microwaves at said second inlet.

4,800,247

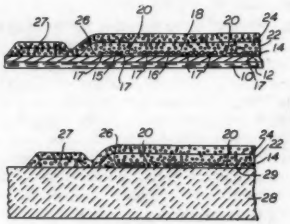
MICROWAVE HEATING UTENSIL

Marvin Schneider, Bryn Mawr, Pa.; Louis A. Blanco, Tuckahoe, and Salvatore A. Milo, Yonkers, both of N.Y., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 826,087, Feb. 4, 1986. This application Apr. 3, 1987, Ser. No. 34,496

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 E 33 Claims



1. A microwave heating utensil comprising a substantially microwave-transparent body and a particulate susceptor mate-

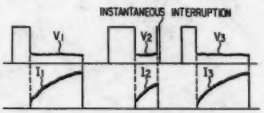
rial fixed to said body, said susceptor material comprising zinc and one or more zinc antioxidant metals.

4,800,248

ELECTRICAL DISCHARGE MACHINING APPARATUS WITH DISCHARGE CURRENT CONTROL

Shoji Futamura, Kawasaki, and Masaki Kurihara, Tokyo, both of Japan, assignors to Institute of Technology Precision Electrical Discharge Works, Japan

Filed Dec. 21, 1987, Ser. No. 137,502
Claims priority, application Japan, Dec. 22, 1986, 61-305935
Int. Cl.[4] B23H *1/02*
U.S. Cl. 219—69 S **7 Claims**



1. A discharge machining apparatus having a discharge current control means for controlling a discharge current flowing between an electrode and a workpiece as a result of the application of a d-c voltage, a discharge current value setting means for setting the value of said discharge current, and a discharge current pulse width setting means for setting the pulse width of said discharge current, in which said discharge current control means carries out discharge machining by controlling said discharge current in accordance with a discharge current value set by said discharge current value setting means and a discharge current pulse width set by said discharge current pulse width setting means; characterized in that an abnormal mode detecting means for detecting an electrical shortcircuiting between said electrode and said workpiece and an instantaneous interruption of said discharge current taking place during an ON duration of said discharge current pulse, and a forced cut-off means for cutting off the supply of said discharge current for a predetermined period of time immediately after said abnormal mode detecting means detects the occurrence of said electrical shortcircuiting or said instantaneous interruption are provided; said discharge current value setting means being adapted to set a discharge current value which is gradually increased with the lapse of said discharge current pulse ON duration.

4,800,249

AUTOMATIC SYSTEM FOR ASSEMBLY AND WELDING METAL SHEET BODIES, PARTICULARLY CAR BODIES, SUITABLE FOR HIGH MASS PRODUCTION

Gaetano Di Rosa, Pino Torinese, Italy, assignor to Fata European Group S.p.A., Pianezza, Italy

Continuation of Ser. No. 750,992, Jul. 2, 1985, abandoned, which is a continuation of Ser. No. 716,032, Mar. 26, 1985, abandoned.
This application Aug. 13, 1987, Ser. No. 86,214
Claims priority, application Italy, Mar. 26, 1984, 20226 A/84
Int. Cl.[4] B23K *37/02*
U.S. Cl. 219—79 **8 Claims**

1. An automatic system for the production of sheet metal bodies, comprising:

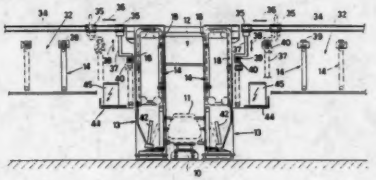
means defining a single body-processing station for receiving a plurality of bodies to be welded;

a pair of stores vertically elevated above and positioned on opposing sides of said single body-processing station;

a plurality of forming-welding assemblies contained in said stores, said forming-welding assemblies having welding and auxiliary equipment including as many welding machines as there are welds to be made on one of said bodies, whereby a plurality of welds may be performed on each of said bodies simultaneously;

conveying means for moving said forming-welding assemblies around in said stores and for raising and lowering respective pairs of said forming-welding assemblies between said pair of stores and said single body-processing station;

positioning means, provided at said single body-processing station, for positioning each pair of said forming-welding assemblies in a proper operative position alongside one of



said bodies to be produced at said single body-processing station; and

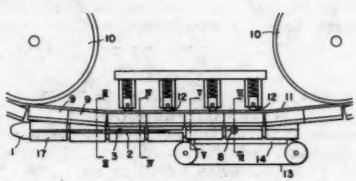
means for providing electrical, hydraulic and pneumatic connections to said forming-welding assemblies for operating said welding and auxiliary equipment thereon when said forming-welding assemblies are respectively at said operative position.

4,800,250

METHODS AND APPARATUS FOR MANUFACTURING TUBES

Michio Watanabe, Yokohama; Kazuhisa Ishibashi, Tokyo; Kenji Matsuno, and Hideo Kurashima, both of Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,548
Claims priority, application Japan, Jun. 23, 1986, 61-146734
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.63 **5 Claims**



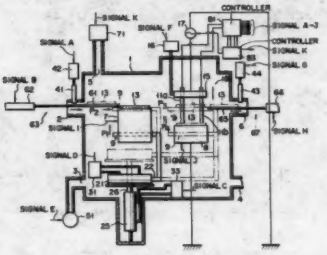
1. A method of producing tubes, comprising the steps of feeding rectangular sheet material around a cylindrical mandrel; advancing said sheet material along an axis of said mandrel, said sheet material being pressed against said mandrel by a tube holder which moves substantially in concert with said sheet material; letting said tube holder hold said sheet material with a first edge of two opposite edges of the sheet material being in intimate contact with a basis plane of a mandrel holder, said basis plane being parallel to the axis of said mandrel; advancing said tube holder along the axis of said mandrel with said sheet material passed through a terminal point of said basis plane of said mandrel holder; guiding said tube holder with a horizontal plane of said mandrel holder, said plane being operative to prevent said tube holder from moving about the circumference of said mandrel; sliding the second edge of said sheet material along a face of a slide plane until said two opposite edges are in abutting edge-to-edge relationship with one another; passing said abutting edges through a predetermined position of a joining apparatus; and joining said abutting edges.

4,800,251

APPARATUS FOR FORMING A RESIST PATTERN

Yasuo Matsuoka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 11, 1986, Ser. No. 884,640
Claims priority, application Japan, Jul. 16, 1985, 60-156510
Int. Cl.[4] B23K 9/00; B44C 1/22
U.S. Cl. 219—121.43 10 Claims



1. A resist pattern-forming apparatus which bakes a substrate on which a predetermined resist pattern has been developed and descums said substrate, comprising:

a vacuum chamber operable to be mechanically evacuated;

baking means set in said vacuum chamber to bake said substrate;

temperature holding means provided in said vacuum chamber to maintain the baked substrate at a predetermined temperature;

transport means for carrying said substrate from said baking means to said temperature holding means;

descumming means for descumming a surface of said substrate while said temperature holding means maintains said surface at the predetermined temperature level;

means for detecting the temperature of the substrate placed on said temperature-holding means; and

means for operating said descumming means for a predetermined length of time at times when said detecting means detects the predetermined temperature level.

4,800,252

APPARATUS FOR HEATING LIQUID MEDIA BY INFRARED IRRADIATION

Fritz Steixner, Stuttgart, Fed. Rep. of Germany, assignor to Rivi Establishment, Vaduz, Liechtenstein

PCT No. PCT/EP83/00299, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO84/01994, PCT Pub. Date May 24, 1984
PCT Filed Nov. 12, 1983, Ser. No. 829,784
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242298
Int. Cl.[4] H05B 1/00; F24H 1/12; C10G 7/00
U.S. Cl. 219—306 4 Claims

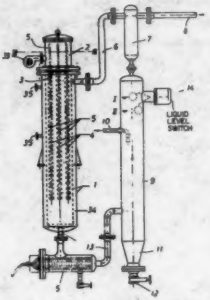
1. An apparatus for treating used oil which has at least one component tending to form deposits when in contact with heated surfaces, comprising

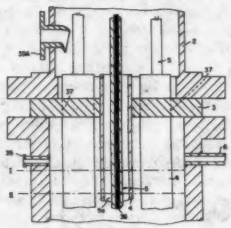
an elongated cracking vessel,

at least one ray-permeable insulating tube disposed within said vessel,

at least one wave generator centrally located within and co-linear with said at least one insulating tube, an intermediate space being provided between said at least one insulating tube and said wave generator, each of said at least one wave generator comprising a ray-permeable insulating jacket and a linear irradiating element disposed within said insulating jacket and operative to heat the oil to a temperature above about 350° C., said insulating jacket having a composition substantially the same as said at least one insulating tube, said irradiating element emitting radiant heat energy, said radiant heat energy adapted to heat the oil in order to obtain at least one fraction with a lower boiling point,

a hood attached to an end of said vessel, each of said at least one wave generator including an end extending into said hood, each of said at least one insulating tube including an





open end extending into said hood and in communication therewith, and

cooling means connected to said hood, said cooling means removing excess heat generated by said wave generator,

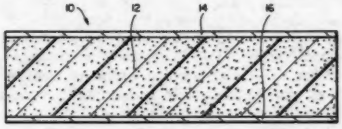
wherein the heating of said at least one insulating tube, said insulating jacket, and said vessel by heat conduction or convection is negligible, and deposits are avoided.

4,800,253

ELECTRICAL DEVICES CONTAINING CONDUCTIVE POLYMERS

Lothar Kleiner, Los Altos, and Martin Matthiesen, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 787,218, Oct. 15, 1985, Pat. No. 4,689,475. This application Aug. 25, 1987, Ser. No. 89,093
Claims priority, application European Pat. Off., Oct. 14, 1986, 0223404
Int. Cl.[4] H05B 3/10
U.S. Cl. 219—553 17 Claims



1. An electrical device which comprises

(1) an element composed of a conductive polymer, and

(2) at leat one metal electrode having a microrough surface which

(i) comprises nickel,

(ii) is in direct physical contact with the conductive polymer element, and

(iii) has a surface comprising at least 50 percent macronodules.

4,800,254

COMMODITY INFORMATION TRANSMISSION SYSTEM FOR ON-LINE TRANSACTION NETWORK

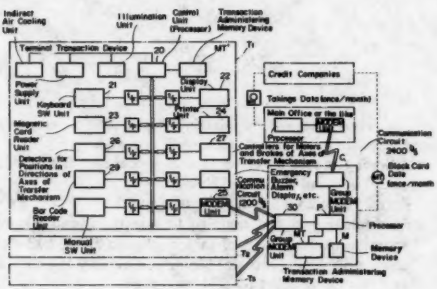
Shigeaki Suzuki, Komaki, and Tatsuya Nozaki, Tokyo, both of Japan, assignors to CDK Corporation and Credix Corporation, both of, Japan

Filed Sep. 26, 1986, Ser. No. 912,428

Claims priority, application Japan, Oct. 8, 1985, 60-222680

Int. Cl.[4] G06K *5/00*; G06F *15/24*

U.S. Cl. 235—380 12 Claims



1. In an on-line transaction network having an administration center and a plurality of terminal transaction devices;

a commodity information transmission system comprising:

a memory device (M) which is disposed in said administration center (C) and in which a plurality of commodity patterns that specify corresponding relations between custodial positions of commodities in said terminal transaction devices (T) and contents of the commodities are stored along with pattern codes affixed to the commodity patterns,

means to transmit the pattern code corresponding to the commodity pattern to said administration center (C) after the commodity has been placed in said terminal transaction device (T) in accordance with any of the commodity patterns, and

a transaction administering memory device (MT) which is disposed in said administration center (C) and in which the commodity pattern read out of said memory device (M) in response to the transmitted pattern code is stored.

4,800,255

ELECTRONIC ACCESS CARD WITH VISUAL DISPLAY

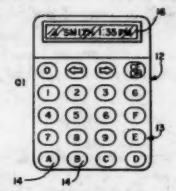
Mir A. Imran, Palo Alto, Calif., assignor to DataTrak, Inc., Mountain View, Calif.

Filed Aug. 22, 1986, Ser. No. 899,338

Int. Cl.[4] G06K *5/00*

U.S. Cl. 235—382 22 Claims

1. In an electronic access card for use with a lock device, a printed circuit board, a microprocessor carried by the printed circuit board, keyboard means connected to the microprocessor for inserting information into the micrprocessor, coupling means coupled to the microprocessor and adapted to receive information from the lock device to be conveyed to the microprocessor and adapted to transmit information from the microprocessor to the lock device and visual display means coupled to the microprocessor for visually displaying information



which is carried in the microprocessor and supplied to or from the lock device.

4,800,256

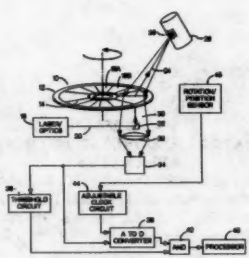
HALOGRAPHIC SCANNER HAVING ADJUSTABLE SAMPLING RATE

Eric C. Broockman, and Robert T. Cato, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1986, Ser. No. 938,930

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—467 9 Claims



1. In an optical scanner of the type having a coherent light source, a rotating holographic optical element having a plurality of facets for deflecting the coherent light beam along predetermined scan lines, said facets having the capability of focusing the coherent light beam at different focal lengths from the optical element, a photosensitive detector for detecting light reflected from an object and a sampling circuit for periodically sampling signals produced by the detector, the improvement comprising means for varying the sampling frequency as a function of the focal length of the facet currently being employed to generate a scan line.

4,800,257

OPTOELECTRONIC READING PEN

Heinz Johner, Embrach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 11, 1987, Ser. No. 13,555

Claims priority, application Switzerland, Feb. 21, 1986, 689/86

Int. Cl.[4] G06K *13/00*

U.S. Cl. 235—472 6 Claims

1. Optoelectronic reading pen for scanning optically encoded information applied to an information carrier, comprising:

means for illuminating the information carrier; and

optoelectronic sensor means for receiving light reflected from the information carrier and converting the received light into an electric signal;

wherein said illuminating means comprises means for collecting ambient light from the environment and applying the collected light to the information carrier, and ambient light from the environment of the reading pen is exclusively used for illuminating the information carrier;

said illuminating means comprising means for concentrating collected ambient light prior to application to the informa-

tion carrier, comprising an essentially hollow-cylindrical pen housing of an optically transparent material, into which pen housing ambient light can enter from the environment through an outside surface, wherein the ambient light entering the pen housing is conducted further towards a scanning side and is there concentrated, said pen housing comprising an optically dull rear outside surface selected as an outside surface for entry of the light.

4,800,258

INFORMATION RECORDING-REPRODUCING APPARATUS

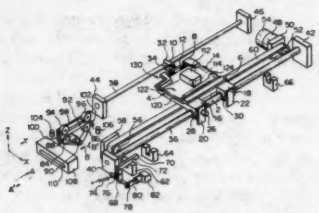
Kenichi Suzuki, and Kazuo Minoura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1986, Ser. No. 919,505

Claims priority, application Japan, Oct. 18, 1985, 60-231393

Int. Cl.[4] G06K *13/04*

U.S. Cl. 235—479 **5 Claims**



1. An information recording-reproducing apparatus comprising:

support means for supporting an information recording medium;

a head for effecting at least one of recording and reproducing of information;

means for reciprocally moving said support means relative to said head to accomplish at least one of recording and reproduction of information;

means for effecting at least one of feeding of the information recording medium onto said support means and taking out of the information recording medium from said support means; and

locking means for locking said support means in the case that the information recording medium is fed onto said support mean.

4,800,259

DOCUMENT TRACK WORK STATION

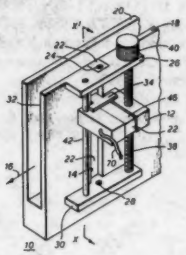
David Steele, Edinburgh, and Robert G. Bradford, Bonnybridge, both of Scotland, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 11, 1986, Ser. No. 906,065

Claims priority, application United Kingdom, Sep. 14, 1985, 8522788

Int. Cl.[4] G06K *13/06*

U.S. Cl. 235—483 **22 Claims**



1. An apparatus which selectively positions a workhead along a slot in a document track wall, comprising:

positioning means, coupled to said workhead, for moving said workhead along said slot;

a flexible strip coupled to said wall; and

strip displacing means, coupled to said workhead and responsive to movement of said workhead along said slot, and for displacing said flexible strip to occupy a portion of said slot unoccupied by said workhead.

4,800,260

PORTABLE CARD-LIKE ARTICLE

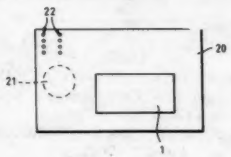
Raymon W. Simpson-Davis, Bishops Waltham, and Allan Bennett, East Meon, both of England, assignors to De La Rue Systems, Limited, England

Filed Dec. 22, 1987, Ser. No. 136,376

Claims priority, application United Kingdom, Dec. 23, 1986, 8630731

Int. Cl.[4] G06F *19/00*

U.S. Cl. 235—487 **7 Claims**



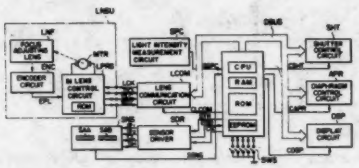
1. A portable card-like article having a force sensing assembly which comprises a support; a force responsive member pivoted to said support; biassing means for biassing said force responsive member towards a rest position; and sensing means for sensing pivotal movement of said force responsive member against said bias in response to an applied force.

4,800,261

APPARATUS FOR DETECTING FOCUSING STATE OF OBJECTIVE LENS

Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 936,734
Claims priority, application Japan, Dec. 5, 1985, 60-272562
Int. Cl.[4] G01J 1/36
U.S. Cl. 250—204 5 Claims



1. An apparatus for detecting a focusing state of an objective lens comprising:

optical means for receiving light fluxes transmitted through an objective lens and forming light intensity distributions based on an object whose relative position varies with a focusing state of the objective lens,

sense means having a plurality of photo-sensors for sensing the light intensity distributions to produce first and second signals for the respective light intensity distributions; and

processing means for manipulating the first and second signals to sequentially and relatively displace the first and second signals under a first relationship to determine a first correlation amount $V_1(k)$, manipulating the first and second signals to sequentially and relatively displace the first and second signals under a second relationship to determine a second correlation amount $V_2(k)$, subtracting the second correlation amount from the first correlation amount to determine an evaluation amount V(k), calculating the evaluation amount for each relative displacement, and calculating the relative position of the light intensity distributions based on the evaluation amounts to produce a signal indicating the focusing state of the objective lens;

said processing means calculating one of the first and second correlation amounts by utilizing another correlation amount previously calculated for another relative displacement.

4,800,262

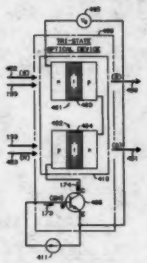
TRI-STATE OPTICAL DEVICE WITH QUANTUM WELL ABSORPTION

Anthony L. Lentine, St. Charles, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 31, 1987, Ser. No. 140,198
Int. Cl.[4] H01J 40/14; H01L 27/12
U.S. Cl. 250—211 J 16 Claims

1. An optical device comprising:

first and second means including respective first and second quantum-well regions and responsive to respective first and second light beams, said first and second light beams having respective first and second optical powers, and third means responsive to an electrical current, for electrically controlling an optical absorption of each of said first and second quantum-well regions, the optical absorption of said first quantum-well region assuming one of first and second predetermined levels and the optical absorption of the second quantum-well region assuming the other of said first and second predetermined levels when at least one of a first ratio of said electrical current to said first optical power and a second ratio of said electrical current to said second optical power exceeds a first predetermined amount, the optical absorption of both of said first and second quantum-well regions assuming the greater of said first and second predetermined levels when both of said



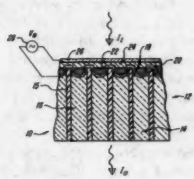
first and second ratios are less than a second predetermined amount.

4,800,263

COMPLETELY CROSS-TALK FREE HIGH SPATIAL RESOLUTION 2D BISTABLE LIGHT MODULATION

Robert F. Dillon, Stoneham, and Cardinal Warde, Newtonville, both of Mass., assignors to Optron Systems, Inc., Waltham, Mass.

Division of Ser. No. 15,055, Feb. 7, 1987. This application Feb. 25, 1988, Ser. No. 160,185
Int. Cl.[4] H01J 40/14
U.S. Cl. 250—213 R 5 Claims



1. A completely cross talk free voltage driven high spatial resolution two-dimensional light modulator, comprising:

a high spatial resolution two-dimensional array of longitudinally extending optical fibers having ends constituting a fiber optic face plate defining longitudinally spaced two-dimensional input and output end faces, the optical fibers of the two-dimensional array of optical fibers each including an opaque cladding surrounding a light transmisive core, the ends of said optical fibers terminating along said two-dimensional input end face having a well therein, such that the opaque cladding of the several optical fibers optically isolates the several wells provided in the ends of the optical fibers from laterally adjacent wells and the several cores optically couple the associated wells with corresponding ends of the optical fibers terminating along the output two-dimensional end face;

a plurality of bistable light modulating elements individually constituted by a photoconductor layer and a phosphor layer that are in intimate mechanical contact and electrical interconnection, each of said bistable light modulating elements being associated with a corresponding one of said wells and in such a way that the phosphor layer is wholely received within the associated well and the photoconductor layer is disposed on the phosphor layer; and

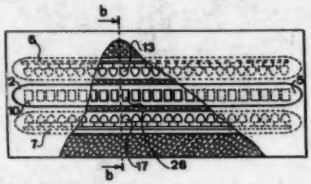
means for applying a voltage in parallel across the plural bistable light modulating elements.

4,800,264

MANUALLY CONTROLLED STATIC SWITCH

Daniel Vissiere, Villefranche de L., France, assignor to VCL Audio, Vezenobres, France

Continuation of Ser. No. 842,657, Mar. 21, 1986, abandoned.
This application Dec. 7, 1987, Ser. No. 129,899
Claims priority, application France, Apr. 1, 1985, 85 05489
Int. Cl.[4] H03K 17/94, 17/969
U.S. Cl. 250—221 6 Claims



1. A manually controlled static switch comprising a body which has at least one oblong slot with a base wall, said slot being bordered on either side by first and second oblong recesses, so that said slot has at least two walls transparent to electromagnetic radiation, positioned laterally of the base wall and substantially parallel to one another, the body being constituted by a plate defined by two substantially parallel faces, said slot issuing by one opening onto a first face and the two recesses issuing by an opening onto the second face, a plurality of juxtaposed electromagnetic radiation beam emitters for emitting a first electromagnetic radiation located in the same first recess, a plurality of juxtaposed receivers located in the same second recess, the two recesses and the slot being located on substantially parallel axes, whereby with each emitter is associated a sensitive receiver, said receiver being able to emit an output signal having at least two different levels as a function of whether the receiver does or does not receive said beam when said beam is interrupted, wherein said base wall is made from a transparent material and said switch also comprises a plurality of juxtaposed light sources of a second electromagnetic radiation in the visible range positioned behind the base wall of said slot respectively corresponding to the emitters and receivers and oriented so as to illuminate the interior of said slot through said base wall and means connected to the outputs of the receivers for controlling each of said sources as a function of the level of said output signal of the sensitive receiver corresponding to this source; said body being made from a material transparent to the first electromagnetic radiation.

4,800,265

OPTICAL FIBER CONTINUITY TESTING WITH PULSATING OPTICAL TEST SIGNAL

Robert L. Marzari; Robert K. Southard, both of Harrisburg, and William J. Stape, Lewisberry, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1986, Ser. No. 842,613
Int. Cl.[4] G01N 21/00
U.S. Cl. 250—227 2 Claims

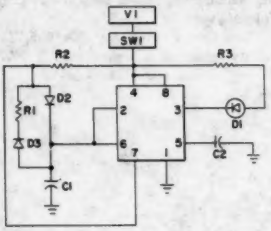
1. A method for testing the continuity of an optical fiber transmission system comprising the steps of:

generating an optical test signal pulsating at a preselected repetition rate from a transmitter coupled to a first optical fiber end of the transmission system,

propagating the test signal from said first optical fiber end through at least one optical discontinuity of said transmission system to a second optical fiber end of said transmission system located remotely from said first end,

sampling said propagated test signal at said second fiber end using a receiver and producing a signal by an indicator of the receiver indicating the intensity of the sampled test signal,

adjusting said discontinuity to cause a variation in the intensity of said optical test signal transmitted through said discontinuity, and



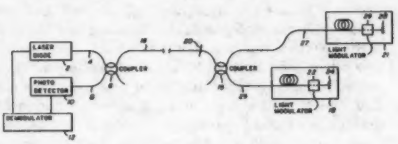
producing a signal by said indicator of said receiver indicating said variation in the intensity of said test signal.

4,800,266

FIBER OPTIC SENSOR WITH LIGHT SAMPLING FOR REFERENCING

Thomas J. Poorman, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 3, 1987, Ser. No. 93,301
Int. Cl.[4] H01J 5/16
U.S. Cl. 250—227 8 Claims



1. An apparatus for sensing a parameter modulating an optical fiber sensor comprising:

an optical energy modulator;

an optical energy source;

an optical path for conveying the optical energy from said optical energy source to said optical energy modulator;

a first optical reflector positioned in said optical path between said source and said optical energy modulator for reflecting a portion of the optical energy reaching said first optical reflector;

a second optical reflector on the opposite side of said optical energy modulator from said first reflector for reflecting optical energy reaching said second reflector;

detection means responsive to the magnitude of the reflected energy from the first reflector and the second reflector for comparing the magnitude of the reflected energy from said first reflector and said second reflector for determining the modulating parameter; and

a second optical path for conveying said optical energy reflected from said partial reflector and from said second reflector to said detection means.

4,800,267

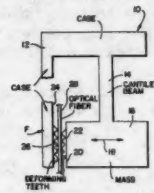
OPTICAL FIBER MICROBEND HORIZONTAL ACCELEROMETER

James B. Freal; Clarence J. Zarobila, and Charles M. Davis, all of 360 Herndon Pkwy., Ste. 1200, Herndon, Va. 22070

Filed Jul. 6, 1987, Ser. No. 70,175
Int. Cl.[4] H01J 5/16, 40/14
U.S. Cl. 250—227 14 Claims

1. A fiber optic microbend accelerometer comprising a rigid housing, a beam connected at one end to the housing, and a mass connected at the other end of the beam, the connected

mass being free to move within the housing upon application of force to the housing in a direction normal to the plane of the beam, a pair of fiber deforming teeth sets mounted in opposed relation, one to the mass and the other to the housing, and an



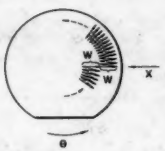
optical fiber positioned between the pair of teeth sets and in contact with the teeth, means for directing radiant energy into an input end of the fiber and means for analyzing the radiant energy at an output end of the fiber.

4,800,268

METHOD AND APPARATUS FOR SCANNING A LASER BEAM TO EXAMINE THE SURFACE OF SEMICONDUCTOR WAFER

Motosuke Miyoshi, Tokyo; Katsuya Okumura, and Shigeru Ogawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1987, Ser. No. 91,867
Claims priority, application Japan, Sep. 17, 1986, 61-218434
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—234 **5 Claims**



1. An apparatus for scanning a laser beam to examine the surface of a semiconductor wafer comprising:

a stage onto which a semiconductor wafer is mounted;

driving means for rotating said semicoductor wafer and for moving the semiconductor wafer by only a predetermined distance in a predetermined direction every rotation of said wafer; and

laser beam scanning means for repeatedly rectilinearly scanning the laser beam at a swing width of a predetermined amount in a direction perpendicular to the rotational direction of the semiconductor wafer.

4,800,269

SCANNING TYPE OPTICAL MICROSCOPE

Yoshiaki Horikawa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1987, Ser. No. 65,034
Claims priority, application Japan, Jun. 20, 1986, 61-144353
Int. Cl.[4] G01N *21/00*
U.S. Cl. 250—234 **8 Claims**

1. A scanning type optical microscope, comprising:

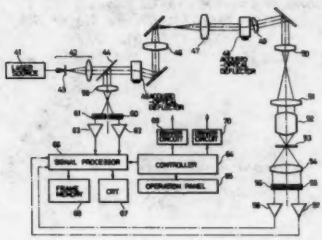
a light source;

an objective lens for collecting a light beam emitting from said light source onto an object;

light beam scanning means disposed on an optical axis lying between said light source and said objective lens for scanning the surface of the object with a light beam;

at least one light detecting means disposed for receiving a light from said object and separated into a first section and a second section;

calculating means connected to said light detecting means for calculating a difference signal of output signals coming



from the first section and the second section of said light detecting means; and

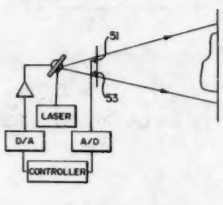
adjusting means connected to said calculating means for adjusting said difference signal with a signal varying with a position where said object is irradiated by said light beam and being synchronous with the scanning of said light beam to thereby obtain a differential phase signal of the object.

4,800,270

GALVANOMETRIC OPTICAL SCANNING SYSTEM HAVING A PAIR OF CLOSELY LOCATED SYNCHRONIZATION

Francois Blais, Vanier, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 65,386, Jun. 23, 1987. This application Dec. 18, 1987, Ser. No. 134,683
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—235 **8 Claims**



1. A galvanometric optical scanning system, comprising:

a scanning mirror rotatably supported on an axis,

mirror drive means for driving the said scanning mirror in an angularly reciprocating fashion about the said axis;

a light source for projecting a beam of light towards the scanning mirror to scan an object with the deflected beam of light deflected from the said scanning mirror;

galvanometric controller means for applying a drive signal to the said mirror drive means;

at least two beam position detection means, each including a pair of closely located photodetectors positioned in an optical path of the deflected beam and comparator means for comparing output signals generated by said pairs of photodetectors, to generate synchronization pulses indicative of precise position of the deflected beam as it scans the object;

synchronization circuit means connected to said beam position detection means for handling said synchronization

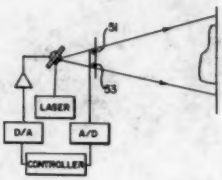
pulses and apply a correction signal to the said galvanometer controller means so that the said drive signal is compensated.

4,800,271

GALVANOMETRIC OPTICAL SCANNING SYSTEM HAVING SYNCHRONIZATION PHOTODETECTORS

Francois Blais, Vanier, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jun. 23, 1987, Ser. No. 65,386
Int. Cl.[4] H01J 3/14
U.S. Cl. 250—235 **6 Claims**



1. A galvanometric optical scanning system, comprising:
a scanning mirror rotatably supported on an axis;
mirror drive means for driving the said scanning mirror in an angularly reciprocating fashion about the said axis;
a light source for projecting a beam of light towards the scanning mirror to scan an object with the deflected beam of light deflected from the said scanning mirror;
galvanometer controller means for applying a drive signal to the said mirror drive means;
at least two synchronization photodetector means positioned in an optical path of the deflected beam to generate synchronization pulses upon impinging of the deflected beam thereon;
synchronization circuit means connected to said synchronization photodetector means for processing said synchronization pulses to generate correction signals indicative of phase variation ϕ, offset E_{off} and gain drift E_{gain} of the drive signal, according to the following equations:

$$\phi = \frac{t_1 + t_2 + t_3 + t_4}{4} - \pi$$

$$E_{off} \simeq T_1 + T_2$$

$$E_{gain} \simeq T_1 + T_2 - 2T_{ref}$$

where t_1, t_2, t_3 and t_4 are timings of four synchronization pulses in each scan cycle and

$T_1 = t_2 - t_1$

$T_2 = t_4 - t_3$

and T_{ref} is a preset reference value; and
means for applying any or all of the said correction signals to the said galvanometer controller means so that the said drive signal is compensated.

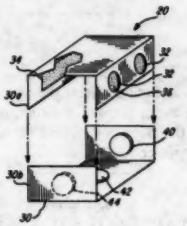
4,800,272

ENVIRONMENTAL GAMMA-RAY AND RADON DETECTOR

Naomi H. Harley, Hoboken, N.J., and Mark L. Maiello, Yonkers, N.Y., assignors to New York University, New York, N.Y.

Filed Mar. 4, 1987, Ser. No. 21,450
Int. Cl.[4] G01T 1/11
U.S. Cl. 250—253 **15 Claims**

1. A device for measuring environmental radioactivity comprising:
a housing having walls for enclosing a volume of air inside the housing, at least one wall having at least one opening therethrough for permitting radioactive gas to continuously diffuse into the volume of air; and
a first radiation detection means mounted within the housing, for generating a first signal responsive to an amount of radioactivity produced over a period of time by the radioactive gas diffused in the volume of air, the first radiation detection means further comprising at least one thermoluminescence dosimeter mounted in close proximity to an electret,
a second radiation detection means mounted within the housing, for generating a second signal responsive to an



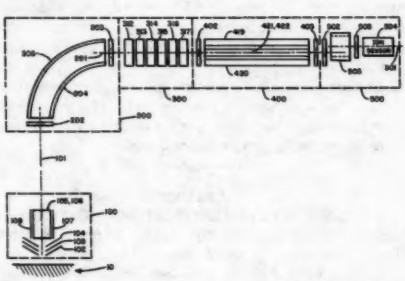
amount of environmental gamma radiation over the period of time, the second radiation detection means further comprising at least one thermoluminescence dosimeter, and
a third radiation detection means mounted within the housing, for generating a third signal indicative of an amount of fading of said second signal over the period of time, the third radiation detection means further comprising at least one thermoluminescence dosimeter having an initially predetermined third signal,
the device for measuring environmental radioactivity not having any means for actively moving the radioactive gas into the housing.

4,800,273

SECONDARY ION MASS SPECTROMETER

Bradway F. Phillips, P.O. Box 201526, Bloomington, Minn. 55420

Filed Jan. 7, 1988, Ser. No. 141,588
Int. Cl.[4] H01J 49/04
U.S. Cl. 250—288 **6 Claims**



1. A secondary ion mass spectrometer system adaptable for placement in close proximity to a specimen surface, comprising
(a) an ion collection lens having three spaced-apart conical sections aligned along a first axis, including a first conical section having means for electrostatically focusing ions into a stream along said first axis, a second conical section

having means for electrostatically attracting and accelerating said ions emitted from said specimen surface, and a third conical section having means for electrostatically influencing said ions for energy window matching to an entrance aperture of a quadrupole mass spectrometer;

(b) an electrostatic ion deflector positioned adjacent said ion collection lens, said deflector having four mutually orthogonal plates equally spaced about said first axis;

(c) an ion energy spectrometer having an entrance aperture aligned with said first axis, said ion energy spectrometer further comprising two 90. sectors of spherical arcuate plates having an inlet aligned with said entrance aperture and having an exit aligned with an exit aperture, said exit aperture being aligned with a second axis;

(d) an ion bunching and deceleration lens assembly positioned adjacent said exit aperture and aligned along said second axis;

(e) said quadrupole mass spectrometer having its entrance aperture and having an exit aperture respectively aligned along said second axis; and

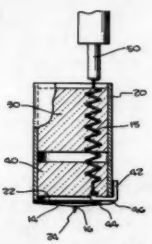
(f) an ion detector having an entrance aperture aligned along said second axis immediately adjacent the exit aperture of said quadrupole mass spectrometer, said ion detector having means for generating electrical signals responsive to and representative of ions received through said entrance aperture.

4,800,274

HIGH RESOLUTION ATOMIC FORCE MICROSCOPE

Paul K. Hansma, and Richard Sonnenfeld, both of Goleta, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 2, 1987, Ser. No. 9,682
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—306 **3 Claims**



1. An atomic force microscope to generate topographs of the surface of a sample, comprising:

point means for contacting said sample;

wire means for suspending said point means;

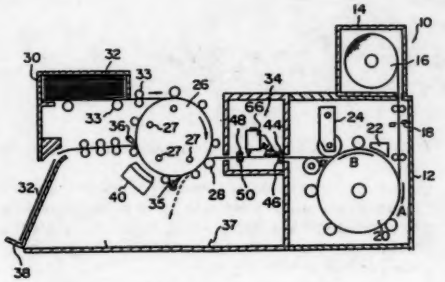
electrode means, disposed adjacent to said wire means, for allowing a tunnelling current to flow between said wire means and said electrode means as said point coarsely adjusting including, in association with said tube means a boss, piezoelectric bending means, mounted to said boss, for moveably supporting said electrode means, and a coupling threadingly engaging said boss and supporting said wire means.

4,800,275

HEAT-DEVELOPING AND TRANSFERRING APPARATUS

Masayuki Shimizu, and Sumio Yoshikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,937
Claims priority, application Japan, Apr. 3, 1986, 61-77457; Apr. 18, 1986, 61-90372; May 22, 1986, 61-118301; May 22, 1986, 61-118298
Int. Cl.[4] G03C *5/08*
U.S. Cl. 250—317.1 **20 Claims**



1. A heat developing and transferring apparatus for conducting a heat development of a latent image formed on an exposed heat-developable photosensitive material and for conducting transfer of the developed image from said heat-developable photosensitive material to an image receiving material in the presence of an image forming solvent, comprising:

a rotary drum on which said image receiving material and said heat-developable photosensitive material are wound in layers;

image receiving material supply means for supplying said image receiving material onto said rotary drum so as to wind said image receiving material on an outer peripheral surface of said rotary drum;

conveyor means for conveying said heat-developable photosensitive material towards said rotary drum so as to wind said heat-developable photosensitive material on said image receiving material which has been wound on said rotary drum;

application means for applying said image forming solvent to only one side of at least one of said image receiving material and said heat-developable photosensitive material;

first heating means for heating said heat-developable photosensitive material and said image receiving material on said rotary drum so as to effect at least transfer of the image;

first separation means disposed in the vicinity of the outer peripheral surface of said rotary drum for separating said heat-developable photosensitive material after the heating from said image receiving material;

drying means for drying said image receiving material remaining on the outer peripheral surface of said rotary drum after separation of said heat-developable photosensitive material; and

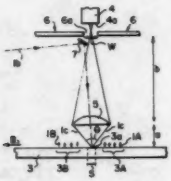
second separation means disposed in the vicinity of the outer peripheral surface of said rotary drum for separating the dried image receiving material from said rotary drum.

4,800,276

RADIATION IMAGE READ-OUT APPARATUS

Masaru Noguchi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 16, 1985, Ser. No. 766,202
Claims priority, application Japan, Aug. 17, 1984, 59-171227; Sep. 26, 1984, 59-201171
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[4] G01T *1/105*
U.S. Cl. 250—327.2 5 Claims



1. An apparatus for reading out a radiation image, which comprises:

(i) a main scanning means for scanning a stimulable phosphor sheet, which carries a radiation image stored therein, by stimulating rays in a main scanning direction to cause said stimulable phosphor sheet to emit light in proportion to the stored radiation energy,

(ii) a sub-scanning means for scanning said stimulable phosphor sheet in a sub-scanning direction by moving said stimulable phosphor sheet with respect to said stimulating rays in a direction approximately normal to said main scanning direction,

(iii) a light guide member provided with a light input face extending in parallel to the main scanning line in said main scanning direction so that light entering from said light input face is guided inside of said light guide member up to a light output face thereof,

(iv) a photodetector closely contacted with said light output face of said light guide member,

(v) a light shielding member positioned between the surface of said stimulable phosphor sheet and said light input face of said light guide member, and provided with an aperture extending in said main scanning direction, and

(vi) an optical system for converging the light emitted by a scanned point on said stimulable phosphor sheet solely in said sub-scanning direction by a cylindrical lens positioned above said stimulable phosphor sheet, and making the light impinge upon said light input face of said light guide member via said aperture of said light shielding member.

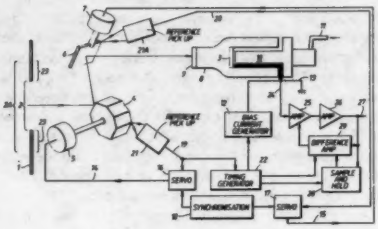
4,800,277

INFRA-RED IMAGER

Andrew de M. Fremont, Chelmsford, United Kingdom, assignor to GEC Avionics Limited, Rochester, United Kingdom

Filed Aug. 12, 1987, Ser. No. 84,489
Claims priority, application United Kingdom, Aug. 13, 1986, 8619719
Int. Cl.[4] G02B *26/10*
U.S. Cl. 250—334 3 Claims

1. An infra-red imager comprising an infra-red sensor of a type which consumes energy, a supply of energy for the sensor, scanning means for causing the sensor to receive radiation from a direction which scans through a range of angles and switching means for switching off the supply of energy to the



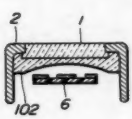
sensor whilst it is receiving radiation from selected angles within the said range.

4,800,278

PYROELECTRIC INFRARED SENSOR

Yoshiharu Taniguti; Shigeki Edano; Kazuhiko Tanaka; Shiniti Taniguti, and Megumi Kuramoto, all of Tottori, Japan, assignors to Nippon Ceramic Co., Ltd., Tottori, Japan

PCT No. PCT/JP86/00275, § 371 Date Oct. 17, 1986, § 102(e) Date Oct. 17, 1986, PCT Pub. No. WO86/07449, PCT Pub. Date Dec. 18, 1986
PCT Filed May 30, 1986, Ser. No. 928,248
Claims priority, application Japan, Jun. 6, 1985, 60-123695; Jun. 6, 1985, 60-123696; Jul. 10, 1985, 60-106009; Jul. 11, 1985, 60-153585; May 7, 1986, 61-105200; May 23, 1986, 61-119831
Int. Cl.[4] G01J *5/04, 5/08, 5/10*
U.S. Cl. 250—338.1 12 Claims



1. An infrared sensor comprising a housing enclosing an infrared sensitive element, said housing having an opening at one end and a conductive window having a peripheral edge, the window being secured to the housing and covering the opening, a conductive adhesive disposed between the peripheral edge of the window and the housing in a plurality of locations for providing a conductive path between the window and the housing for reducing contact resistance therebetween;

said infrared sensitive element including a substrate having a surface;

concentric inner and outer electrodes formed on the surface of the substrate;

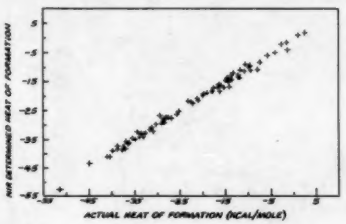
a plano-concave converging lens disposed in opposed relationship to the substrate and to the inner and outer electrodes, said lens positioned for receiving incident infrared rays passing through said window and directing the rays onto said inner and outer electrodes in a direction substantially perpendicular to the surface of said substrate.

4,800,279

METHODS AND DEVICES FOR NEAR-INFRARED EVALUATION OF PHYSICAL PROPERTIES OF SAMPLES

Gary M. Hieftje, Bloomington, Ind.; David E. Honigs, Brier, Wash., and Thomas B. Hirschfeld, Livermore, Calif., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Sep. 13, 1985, Ser. No. 776,133
Int. Cl.[4] G01J 1/00
U.S. Cl. 250—339 23 Claims



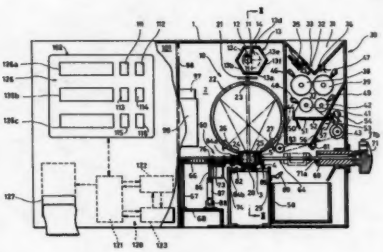
1. A method for quantifying a physical property of a hydrocarbon sample, comprising the steps of:
(a) determining which wavelengths in the near-infrared spectrum correlate to the physical property to be quantified;
(b) determining weighting constants which are correlated to the determined wavelength;
(c) measuring the absorbance of the sample at each of the determined wavelengths; and
(d) calculating a reference value for the physical property from the measured absorbance of the sample as corrected by the weighting constant.

4,800,280

MEASURING APPARATUS FOR AMYLOSE AND/OR AMYLOPECTIN CONTENT IN RICE

Toshihiko Satake, Higashihiroshima, Japan, assignor to 501 Satake Engineering Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1987, Ser. No. 97,748
Claims priority, application Japan, Sep. 19, 1986, 61-222493; Dec. 27, 1986, 61-315799
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[4] G01J 1/00
U.S. Cl. 250—339 18 Claims



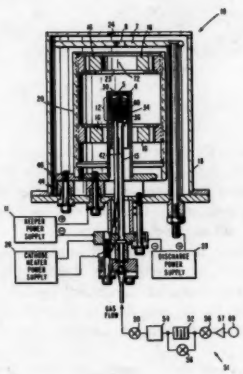
1. An apparatus for measuring amylose and/or amylopectin content in rice, said apparatus comprising:
a sample container located at a predetermined measuring position with sample rice to be measured being contained in said sample container;
a near infrared spectrometer including a light source for applying light to said sample rice, optical means located between said light source and said sample rice for permitting passage of near infrared light beam having its wavelength within a range of from 1900 nm to 2500 nm, of the light from said light source, and luminous intensity detecting means for detecting luminous intensity of the light reflected from and/or transmitted through said sample rice to generate signals representative of the luminous intensity;
control means including memory means for storing therein content conversion coefficients set for the amylose and/or amylopectin, and calculation means for calculating the amylose and/or amylopectin content in said sample rice, based on the content conversion coefficients and said signals from said luminous intensity detecting means; and
display means connected to said control means for displaying the amylose and/or amylopectin content calculated by said calculation means.

4,800,281

COMPACT PENNING-DISCHARGE PLASMA SOURCE

Weldon S. Williamson, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 653,615, Sep. 24, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 922,582
Int. Cl.[4] H01J 27/00
U.S. Cl. 250—427 16 Claims



1. A plasma source housed in an outer enclosure comprising:
a tubular cathode having a tip defining an orifice disposed inside said enclosure for thermionically emitting electrons;
electron emission means comprising foil means disposed within said cathode adjacent said orifice;
a planar anode having an exit aperture, said anode and cathode being coaxially disposed with a discharge space therebetween, said anode accelerating electrons emitted by said cathode and said emission means into said discharge space;
a first plurality of magnets disposed in a first ring configuration axially with and adjacent to said anode;
a second plurality of magnets disposed in a second ring configuration axially with and adjacent to said cathode;
said first and second ring configuration providing a strong divergent axial magnetic field having an axial maximum adjacent to the exit aperture in said anode, and having an axially minimum a short distance in front of said anode in said discharge space;
discharge power supply means for supplying a relatively high voltage to start discharge in said discharge space and for supplying a reduced voltage to maintain discharge during steady state operation;
means for supplying gas to be ionized to said discharge space

including gas control means for supplying gas at a constant rate during steady state operation of said plasma source and at an increased rate during ignition of said source; and

heating means for initially heating and conditioning said emission means.

4,800,282

APPARATUS AND METHOD FOR DETECTING RESIDUAL ORGANIC COMPOUNDS

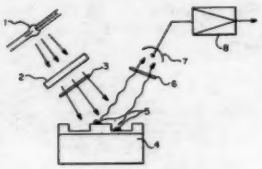
Yasunori Nishimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 823,624, Jan. 29, 1986. This application Jul. 31, 1987, Ser. No. 80,222

Claims priority, application Japan, Feb. 7, 1985, 60-23170; Mar. 22, 1985, 60-59273

Int. Cl.[4] G01M *11/00*

U.S. Cl. 250—461.1 **8 Claims**



1. An apparatus for detecing residual organic compounds on a surface comprising

scanning means for forming an ultraviolet light beam for irradiating a target surface and scanning said target surface with said ultraviolet light beam,

detecting means for detecting fluorescent light from said target surface, and outputting a detection signal in response to said detected fluorescent light,

judging means for judging the existence of residual organic compounds on said target surface from said detection signal, and

display means controlled simultaneously by said scanning and judging means for displaying positions of residual organic compounds left on said target surface.

4,800,283

SHOCK-ABSORBING AND HEAT CONDUCTIVE BASKET FOR USE IN A FUEL ROD TRANSPORTATION CASK

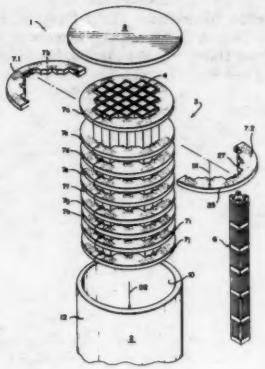
Larry E. Efferding, Pensacola, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1987, Ser. No. 44,694

Int. Cl.[4] G21F *5/00*

U.S. Cl. 250—507.1 **24 Claims**

1. An improved shipping cask for spent fuel rods of the type having a vessel and a basket structure disposed in the interior thereof for holding a plurality of spent fuel containers, wherein the improvement comprises at least one former member disposed between the sides of the basket structure and the side walls of the vessel interior for both mechanically uniting the basket structure and the vessel, and absorbing mechanical shock applied to the exterior of the vessel to protect the spent fuel rods in the containers, wherein said member includes a shock-absorbing portion that deformably yields when mechanical shock of a magnitude indicative of an accident condition is



applied to the outside of the vessel in order to reduce the shock transmitted from the vessel to the basket structure.

4,800,284

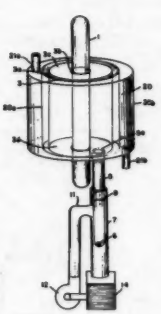
FILTER FOR ISOTOPIC ALTERATION OF MERCURY VAPOR

Mark W. Grossman, Belmont, and William A. George, Gloucester, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 29, 1986, Ser. No. 947,216

Int. Cl.[4] G01N *21/00*

U.S. Cl. 250—505.1 **7 Claims**



1. A filter for enriching the content of ^{196}Hg in a mercury feedstock which flows through a reactor, said filter comprising:

an enclosure, at least a portion of which is transparent to the passage of ultraviolet light;

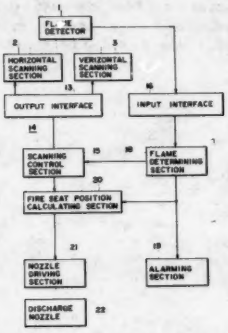
a fill of mercury vapor in said enclosure, said mercury vapor having quantities of ^{196}Hg less than that which is found in naturally occurring mercury.

4,800,285

FLAME DETECTING ARRANGEMENT FOR DETECTING A FLAME THROUGH HORIZONTAL AND VERTICAL SCANNING OF A SUPERVISORY REGION BY USING A PHOTODETECTOR

Kouji Akiba, Yokohama, Japan; Akira Kitajima, Huntington Berch, Calif., and Yoshio Arai, Sagamihara, Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 68,145
Claims priority, application Japan, Jun. 30, 1986, 61-153225
Int. Cl.[4] G08B *17/12*
U.S. Cl. 250—554 **8 Claims**



1. A flame detecting apparatus comprising:

a flame detector having a directivity and comprising a photodetector generating a photo-output in response to the intensity of incident light;

scanning means for driving said flame detector to sequentially scan in a horizontal and a vertical direction within a supervisory region;

scanning control means suspending one of the horizontal and the vertical scanning while repeating the other, a horizontal or vertical position being scanned continuously a plurality of times when a photo-output from said flame detector obtained in the horizontal or vertical scanning by said scanning means exceeds a predetermined threshold value; and

flame determining means comparing the photo-outputs obtained through the repeated scanning to each other and calculates the changes in the photo-output, said flame determining means determining that there is really a flame when changes in the photo-outputs obtained through repeated scanning exceed a predetermined value.

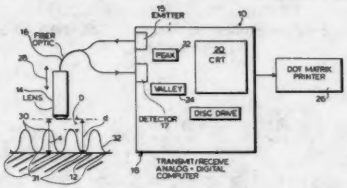
4,800,286

MEASUREMENT OF VARIATION IN FLUTE PROFILE HEIGHT

John H. Brears, North Vancouver, Canada, assignor to MacMillan Bloedel Limited

Filed Aug. 10, 1987, Ser. No. 83,647
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—560 **11 Claims**

1. A method of determining the variation in height of a flute profile of a corrugated material having curved alternating flute tips and valleys comprising passing the corrugated medium in a predetermined space relationship past a beam of light, said beam being directed substantially perpendicularly to each said flute tip and the base of each said flute valley as said tips and valleys traverse said beam, collecting light reflected back from said corrugated medium substantially parallel to said beam and generating voltages representative of said light collected, determining the maxima of said voltages to provide a series of



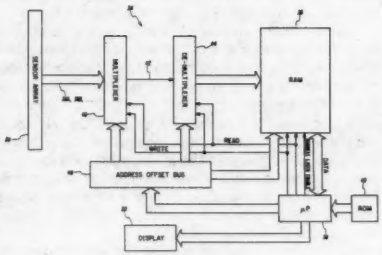
positive maximas the values of which are representative of the relative heights of said tips of said corrugated material.

4,800,287

MEASUREMENT OF IMAGE AREA FROM STORED PIXEL DATA

Eugene L. Green, Sr., and Jefferson H. Taylor, both of Dallas, Tex., assignors to Wilson Engraving Company, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 840,378, Mar. 17, 1986. This application May 5, 1987, Ser. No. 46,980
Int. Cl.[4] G01N *21/86;* G01B *11/28*
U.S. Cl. 250—560 **2 Claims**



1. A method for measuring the area of an image formed on a sheet comprising the steps:

directing light onto the sheet; reflecting light from the sheet onto the sensor read field of a linear array of light responsive sensor cells, each sensor cell having first and second logic states corresponding with first and second levels of incident light;

advancing said sheet incrementally relative to the sensor read field of said array in a sequence of scanning increments in which said image is traversed by said read field;

generating a digital data word corresponding with the logic condition for each sensor cell during each scanning increment;

storing the data words corresponding to the logic condition of each sensor cell in unique address locations of a memory;

counting the number of data words corresponding with the production of a selected one of said logic states in response to the reflection of light from the image area;

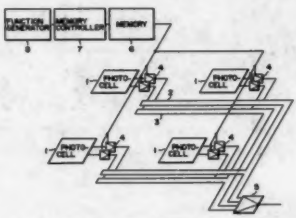
dividing the number of counted data words by a number corresponding with the known sensor cell density.

4,800,288

OPTICAL IMAGE TRANSFORMATION APPARATUS

Shintaro Inagaki, Ebina, and Akira Kobayashi, Fujisawa, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jul. 13, 1987, Ser. No. 72,417
Claims priority, application Japan, Jul. 18, 1986, 61-170594
Int. Cl.[4] H01J 40/14
U.S. Cl. 250—578 20 Claims



1. An optical image transformation apparatus for two-dimensionally transforming an intensity distribution of received light, comprising:

a plurality of photocell means, two-dimensionally arranged on a single light-receiving plane, for outputting signals corresponding to the intensities of the received light;

first sum signal output line means for receiving signals output from said photocell means, and for transmitting a signal corresponding to the sum of the output signals to the outside;

transmission switching means, each of which is arranged between each of said photocell means and said first sum signal output line means in correspondence with said photocell means, and has a capability for amplifying, attenuating, transmitting, and isolating the output signal from the corresponding photocell means in accordance with a control signal, so as to amplify or to attenuate the output signal from the corresponding photocell means and to transmit or not to transmit it into said first sum signal output line means;

memory means for storing the control signals including weighting data for indicating the amplification factors, the attenuation factors, and the information whether to transmit or isolate for said transmission switching means, and for outputting the control signals for causing said transmission switching means to perform amplification, attenuation, transmission, or isolation;

memory control means for writing the weighting data into said memory means; and

function generating means for generating the weighting data of two-dimensional functions, and for transmitting the weighting data to said memory control means.

4,800,289

ANTI-SKID APPARATUS FOR AUTOMOTIVE VEHICLE

Yoshiharu Adachi, Gamagori; Takumi Nishimura, Chiryu; Hiroaki Takeuchi, Toyota; Noboru Noguchi, Toyota; Nobuyasu Nakanishi, Toyota, and Hiromu Kuromitsu, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 20, 1987, Ser. No. 4,707
Claims priority, application Japan, Dec. 22, 1986, 61-306026
Int. Cl.[4] B60T 8/40
U.S. Cl. 303—119 12 Claims

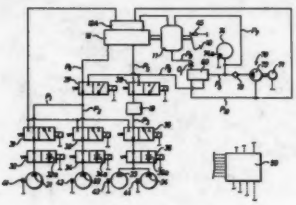
1. An anti-akid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, comprising:

a fluid reservoir arranged to store an amount of hydraulic fluid;

a hydraulic power pressure source connected to said fluid reservoir and comprising means to produce a hydraulic power pressure at a predetermined level;

a regulator valve connected to said power pressure source and comprising means to control the hydraulic power pressure in response to a braking operation;

a first switchover valve disposed within a braking circuit connecting said master cylinder to said wheel brake cylinder, said first switchover valve comprising means for permitting a flow of fluid under pressure to be supplied therethrough from said master cylinder to said wheel brake cylinder when in a deactivated condition thereof and being arranged to be intermittently activated when a road wheel tends to be locked in braking operation, said first switchover valve being connected to said fluid reservoir to connect said wheel brake cylinder to said fluid reservoir when in an activated condition thereof;



a second switchover valve disposed within the braking circuit between said master cylinder and said first switchover valve, said second switchover valve comprising means for permitting a flow of fluid under pressure to be supplied therethrough from said master cylinder to said first switchover valve in a deactivated condition thereof and being arranged to be activated when the road wheel tends to be locked, said second switchover valve being connected to said regulator valve and having means to interrupt the flow of fluid under pressure from said master cylinder and permit the flow of fluid under controlled power pressure supplied therethrough from said regulator valve to said first switchover valve when in an activated condition thereof;

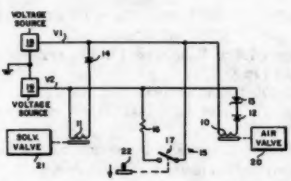
wherein said regulator valve is arranged independently of said master cylinder to modulate the hydraulic power pressure in dependence upon a hydraulic pressure created in said master cylinder in braking operation.

4,800,290

CONTROL CIRCUITRY

Robert A. Norcross, Jr., Newton, Mass., assignor to Norcross Corporation, Newton, Mass.

Filed Nov. 18, 1987, Ser. No. 123,321
Int. Cl.[4] H02H 3/28
U.S. Cl. 307—43 7 Claims



1. Control circuitry comprising:

a first voltage source for supplying a first voltage V1;

a second voltage source for supplying a second voltage V2;

a first circuit comprising an energizable means and a first

diode arrangement connected in series therewith across said first and second voltage sources;

a second circuit comprising a second energizable means and a second diode arrangement connected in series therewith across said first and second voltage sources;

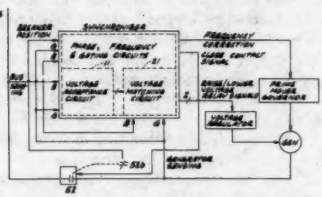
said first and second voltages being arranged so that V1-V2 is greater than a first value, said first diode arrangement becomes conductive and said first energizable means is energized and, when V1—V2, is less than a second value, said second diode arrangement is conductive and said second energizable means is energized.

4,800,291

ELECTRONIC CIRCUIT FOR CONTROL OF A VOLTAGE REGULATOR OF AN ELECTRICAL GENERATOR

Jack R. Bowers, Madison, Ill., assignor to Basler Electric Company, Highland, Ill.

Filed Mar. 4, 1987, Ser. No. 21,906
Int. Cl.[4] H02J *3/00*; H02H *3/00*
U.S. Cl. 307—87 **20 Claims**



1. An electronic circuit for use with an electrical generator having a voltage regulator which responds to raise or lower control signals produced by control pulses to change the voltage output of the generator, the electronic circuit comprising:

means for sensing the magnitude of the difference between the voltage output of the generator and the voltage of a bus to which the generator is to be connected; and

means, responsive to the magnitude of the difference sensed by said means for sensing, for generating control pulses having a pulse duration which is a function of the magnitude of the sensed difference wherein each control pulse has a fixed maximum pulse duration when the magnitude of the difference is greater than a first predetermined value, wherein each control pulse has a pulse duration which decreases with a decreasing magnitude of difference down to a fixed minimum pulse duration at a second and lesser predetermined value of the magnitude of difference when the magnitude of the sensed difference is less than the first predetermined value, and wherein each control pulse has the minimum pulse duration when the magnitude of the difference is less than the second predetermined value, whereby the control pulses produce the raise or lower control signals for the voltage regulator to cause the voltage output of the generator to approach the voltage of the bus.

4,800,292

TEMPERATURE SENSING CIRCUIT

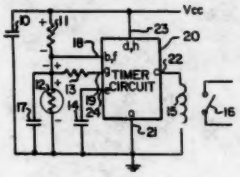
Jimmie D. Gillett, Garland, Tex., assignor to Ranco Incorporated, Dublin, Ohio

Continuation of Ser. No. 601,270, Apr. 17, 1984, abandoned. This application Jun. 24, 1987, Ser. No. 68,776
Int. Cl.[4] H01H *35/00*
U.S. Cl. 307—117 **8 Claims**

1. A temperature sensing apparatus comprising:

a first and second set point temperature sensing circuit including a thermistor for placement in operative association with a medium and connected to a voltage divider having first and second resistors of preselected values for generating first and second voltages indicative of the medium's first and second set point temperatures; and

a 555 timer having its threshold and trigger inputs coupled to the voltage divider for monitoring first and second voltages from the set point temperature sensing circuit, said



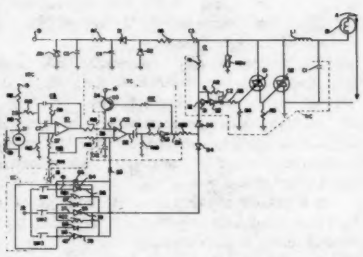
555 timer outputting first and second logic state output signals indicative, respectively, of temperatures below the first set point temperatures and above the second set point temperature wherein a hysteresis effect is generated for switching between the first and second logic state output signals.

4,800,293

INFRASONIC SWITCH

Robert E. Miller, 1301 Rose Island Rd., Prospect, Ky. 40059

Filed Apr. 16, 1987, Ser. No. 38,945
Int. Cl.[4] H01H *35/00*
U.S. Cl. 307—117 **10 Claims**



1. Infrasonic switch apparatus disposed between an alarm signal means and an alternating current power source, comprising;

infrasonic detection means for providing an intrusion signal in response to selected levels of infrasonic energy;

timing circuit means connected to said infrasonic detection means for providing a signal output for a predetermined time in response to said intrusion signal;

delay switching angle trigger switch means connected between said alarm signal means and said power source for receiving said signal output of said timing circuit means for enabling a current flow through said alarm signal means in response to said output of said timing circuit means; and

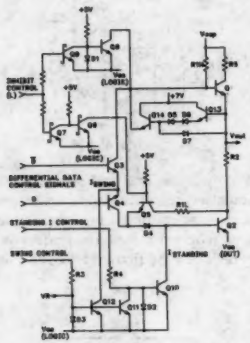
multi-position switch means connected to said timing circuit means and having at least one first position for enabling said timing circuit means to either have a continuous signal output or to interrupt the signal output thereof and also having at least one other position for enabling said timing circuit means to provide an output for said predetermined period of time.

4,800,294

PIN DRIVER CIRCUIT

Keith A. Taylor, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 25, 1988, Ser. No. 147,484
Int. Cl.[4] H03K 3/023, 5/12
U.S. Cl. 307—263 8 Claims



1. A circuit for producing an output signal that switches between a high level and a low level in response to a control signal, the circuit comprising:

an output resistor having a high end and a low end, the output signal being taken from the high end;

a high end transconductance amplifier having an input, a high output, and a low output, with the high output coupled to a voltage source and the low output coupled to the high end of the output resistor;

a high input resistor coupled between the input of the high end transconductance amplifier and the high output of the high end transconductance amplifier;

a low end transconductance amplifier having an input, a high output, and a low output, with the high output coupled to the low end of the output resistor and the low output coupled to a return voltage;

a low input resistor coupled between the input of the low end transconductance amplifier and the high output of the low end transconductance amplifier;

a swing voltage current source having an input and an output, with the input coupled to the return voltage;

a current switch having a current input, a control input, a first current output, and a second current output, with the current input receiving current from the output of the swing voltage current source, the first current output providing current to the end of the high input resistor that is connected to the input of the high end transconductance amplifier when the control input is in a first condition, and the second current output providing current to the end of the low input resistor that is connected to the input of the low end transconductance amplifier when the control input is in a second condition, such that the output signal goes to the low level when the current is provided to the high input resistor and the output signal goes to the high level when the current is provided to the low input resistor; and

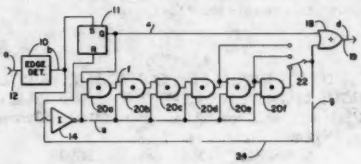
a standing current control current source having an input and an output, with its input coupled to the return voltage and its output coupled to the input of the low end transconductance amplifier so as to provide a means for reducing flow of a standing current through the output resistor.

4,800,295

RETRIGGERABLE MONOSTABLE MULTIVIBRATOR

Vadim B. Minuhin, and Vernon F. Von Deylen, both of Bloomington, Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 11,973, Feb. 6, 1987, Pat. No. 4,760,472. This application Mar. 29, 1988, Ser. No. 174,553
Int. Cl.[4] H03K 3/10, 3/033
U.S. Cl. 307—273 18 Claims



1. A retriggerable monostable multivibrator comprising:

bistable means responsive to an input pulse for setting the bistable means to a first output state and responsive to a reset signal for resetting the bistable means to a second output state, said second output state being opposite said first output state; and

propagation chain means responsive to the first output state of said bistable means for providing said reset pulse signal upon a predetermined period after said bistable means is set to its first output state, said propagation chain means being responsive to said input pulse for cancelling a reset signal in process of being provided; and

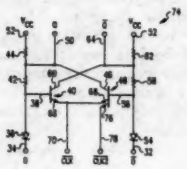
output means responsive to said bistable means and to said propagation chain means for producing an output pulse while either said bistable means is in its first output state or said propagation means provides said reset signal.

4,800,296

METASTABLE DEFEATING FLI-FLOP

Kevin M. Ovens; Jay A. Maxey, both of Garland, and Craig B. Greenberg, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1987, Ser. No. 46,074
Int. Cl.[4] H03K 3/286
U.S. Cl. 307—291 15 Claims



1. A flip-flop circuit comprising:

an input to receive input signals;

first and second transistors each responsive to said input signals, said second transistor having a first emitter and a second emitter; and

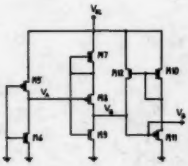
means to render said second emitter conducting in response to concurrent conduction of said first transistor and said first emitter of said second transistor, such that additional current conducted through said second emitter results in nonconduction of said first transistor.

4,800,297

SOURCE BIAS GENERATOR FOR NATURAL TRANSISTORS IN MOS DIGITAL INTEGRATED CIRCUITS

David Novosel, West Middlesex, Pa., and Giovanni Campardo, Bergamo, Italy, assignors to SGS Microelecttronica spa, Catania, Italy

Filed Jun. 1, 1987, Ser. No. 56,866
Claims priority, application Italy, Jun. 3, 1986, 20660 A/86
Int. Cl.[4] H03K *3/013, 17/16, 17/687;* **G11C** *11/40*
U.S. Cl. 307—296 R **17 Claims**



1. A source bias voltage generator for natural transistors each having a source, a drain, a gate driven by a control signal, and having a negative turn-off threshold voltage, particularly for digital integrated circuits such as EPROM memories, characterized in that said generator comprises:

(a) a reference voltage generator stage supplied by a supply voltage and generating a reference voltage approximately equal to the turn-off threshold voltage of a natural transistor, with its sign changed; and

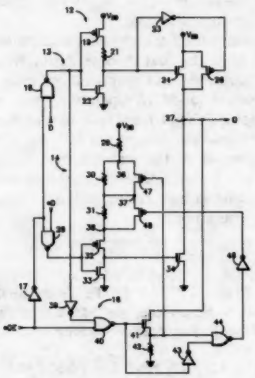
(b) a doubler stage driven by said reference voltage and supplying a bias voltage equal to twice said reference voltage.

4,800,298

OUTPUT BUFFER FOR IMPROVING DI/DT

Ruey J. Yu, and Alan R. Bormann, both of Austin, Tex., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Aug. 4, 1987, Ser. No. 81,194
Int. Cl.[4] H03K *17/04, 17/12, 17/284, 17/687*
U.S. Cl. 307—443 **14 Claims**



1. A buffer circuit comprising:

driver means, coupled to an output terminal and having an input, for passing current between a first power supply terminal and the output terminal in proportion to a voltage level on said first input in order to change a voltage level on said output terminal

a first transistor and a first resistor, and a second resistor coupled in series between a second power supply terminal and the input of the driver means, said first transistor having a control electrode for receiving a first input signal;

a second transistor, responsive to the first input signal, coupled between the first power supply terminal and the input of the driver means;

impedance means, coupled to the output terminal and the first for providing a resistance in parallel with the first resistor which is proportional to the voltage on the output terminal; and

sensing means, coupled to the output terminal, for providing a sense signal at a voltage representative of the voltage on the output terminal; and

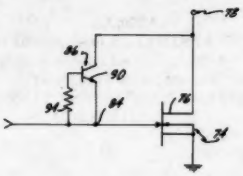
a second third transistor coupled in parallel with said second resistor and enabled by an enable signal.

4,800,299

METHOD AND APPARATUS FOR MOSFET RADIATION FAILURE CIRCUMVENTION

William C. Hayward, Marina Del Rey, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 18, 1986, Ser. No. 943,976
Int. Cl.[4] H03K *19/08*
U.S. Cl. 307—308 **25 Claims**



1. A radiation hardened electrical circuit which comprises:

a MOSFET device having a gate, a source and a drain; said source being electrically connected to an electrical circuit, said electrical circuit including a voltage source;

means for sensing a radiation event,

means for imposing an "on" enabling bias voltage on said gate during a sensed radiation event so as to bias said MOSFET device in an "on" state at least during said radiation event, and

timing means for maintaining said "on" enabling bias voltage imposed on said gate of said MOSFET device for a time period at least as long as said radiation event.

4,800,300

HIGH-PERFORMANCE, CMOS LATCH FOR IMPROVED RELIABILITY

Donald M. Walters, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1987, Ser. No. 115,279
Int. Cl.[4] G11C *11/40*
U.S. Cl. 307—279 **13 Claims**

11. A CMOS latch circuit comprising:

a P-channel precharge transistor (P1) having a source connected to a supply potential (VCC), a gate, and a drain;

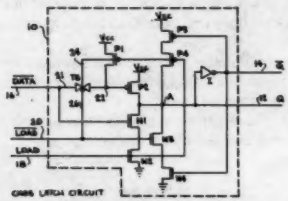
A P-channel drive transistor (P2) having a source connected to the supply potential, a gate connected to the drain of said P-channel precharge transistor (P1), and a drain connected to a storage node (A) and a true data output terminal (12);

an N-channel drive transistor (N1) having a drain connected to the drain of said P-channel drive transistor (P2), a gate connected to a first input terminal (16) for receiving a complementary data input signal, and a source;

an N-channel enable transistor (N2) having a drain con-

nected to the source of said N-channel drive transistor (N1), a gate connected to a second input terminal (18) for receiving a true load signal, and a source connected to a ground potential;

transmission gate means responsive to the true load signal and a complementary load signal for communicating said



complementary data input signal to the gate of said P-channel drive transistor (P2); and

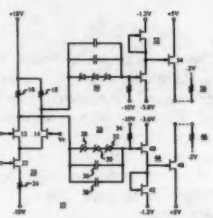
output transistor means responsive to said true and complementary load signals and to true and complementary data output signals for maintaining said latch circuit in one of two states.

4,800,301

METHOD AND APPARATUS FOR SENSING SIGNALS

Sheng J. Tsai, Newtown, Pa., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 127,401
Int. Cl.[4] H03K *5/24*
U.S. Cl. 307—362 **12 Claims**



1. A method for sensing whether the amplitude of an input signal exceeds a reference voltage of predetermined amplitude comprising the steps of:

applying the input signal to the gate of a first field effect transistor (FET) having its drain coupled to a voltage source and having its source at a potential less than that of said voltage source;

applying the reference voltage to the gate of a second FET having its drain coupled to the voltage source and its source coupled to ground; and

the first and second FETs each conducting to the exclusion of the other while the amplitude of the signal at the gate of one FET exceeds the amplitude of the signal at the gate of the other FET, CHARACTERIZED IN THAT:

each of the first and second FETs is a high-speed device and has its drain coupled by a separate one of a pair of resistors to the voltage source and its source coupled to a current source;

the voltage at the drain of one of the FETs is compensated for variations caused by changes in the operating characteristics of the FETs due to temperature variations; and

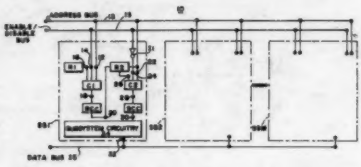
the compensated drain voltage is applied to a voltage-sensitive switch which serves to output a separate one of a pair of indicating voltages having different amplitudes, when the compensated drain voltage has an amplitude larger and smaller, respectively, than a predetermined threshold voltage.

4,800,302

REDUNDANCY SYSTEM WITH DISTRIBUTED MAPPING

John R. Marum, Stanford, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 17, 1987, Ser. No. 74,602
Int. Cl.[4] H03K *19/003*
U.S. Cl. 307—441 **20 Claims**



1. A distributed mapping system for interconnecting multiple subsystems, some of which are redundant or defective, comprising:

address bus means for selecting a particular subsystem for use in an operation or for performance of some function; and

mapping circuitry associated with each of the subsystems, and having

first storage means, for registering a physical address of the subsystem,

second storage means, for registering a logical address for accessing the subsystem,

means for modifying the logical address of the subsystem during a configuration mode of operation,

means for comparing the logical address of the subsystem with an address impressed on the address bus means during a normal mode of operation, and

means for activating the subsystem in response to the detection of a match by the means for comparing;

and wherein the means for modifying the logical address of the subsystem includes

means for comparing the physical address of the subsystem stored in the first storage means with a physical address impressed on the address bus means during the configuration mode of operation, and generating a match signal if the physical address matches the address on the address bus means, and

means responsive to the match signal, for enabling the transfer of a logical address from the address bus means to the second storage means, for later use in the normal mode of operation.

4,800,303

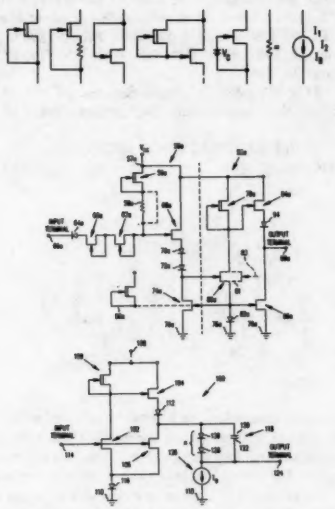
TTL COMPATIBLE OUTPUT BUFFER

Andrew C. Graham, Sunnyvale, and Mark E. Fitzpatrick, San Jose, both of Calif., assignors to Gazelle Microcircuits, Inc., Santa Clara, Calif.

Filed May 19, 1987, Ser. No. 51,983
Int. Cl.[4] H03K *19/094, 19/017, 19/003, 17/04*
U.S. Cl. 307—450 **16 Claims**

1. A buffer circuit having a buffer circuit input signal lead for receiving an input signal, a buffer circuit output signal lead for providing an output signal, a first voltage supply terminal and a second voltage supply terminal, comprising means for providing that in the state with the output signal high, no substantial current is provided inward of the buffer circuit from the output signal lead over a wide range of voltages

applied to the output signal lead, including applied voltages substantially greater than that receivable by the first and second voltage supply terminals, and wherein said buffer circuit is implemented in compound semiconductor technology.



4,800,304

TIME DELAY CIRCUIT FOR A SEMICONDUCTOR DEVICE

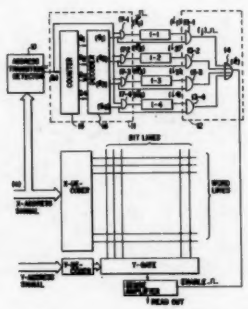
Atsushi Takeuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 6,206, Jan. 23, 1987, abandoned. This application May 9, 1988, Ser. No. 193,192

Claims priority, application Japan, Feb. 4, 1986, 61-22528

Int. Cl.[4] H03K *17/26*; G11C *7/00*

U.S. Cl. 307—602 **6 Claims**



1. A semiconductor device comprising:

a plurality of delay circuits delaying an input signal having a first level and a second level, said delay circuits having a predetermined delay time;

a selection circuit connected to said delay circuits, said selection circuit selecting one of said delay circuits, in sequence, in response to a transition from the first level, which is an initial state, to the second level of the input signal and supplying said input signal of said second level to said selected one of said delay circuts, said selection circuit resetting unselected ones of said delay circuits to an initial state;

a plurality of first gate circuits each of which having input terminals, a first input terminal being connected to an associated one of said delay circuits and a second input terminal being connected to said selection circuit's output terminal associated with said delay circuit, each of said first gate circuits outputting a delayed input signal only from said associated selected one of said delay circuits and inhibiting output from said each associated unselected one of said delay circuits by having a level of said second input terminal of said first gate circuit vary from said second level to said first level; and

a second gate circuit, each input terminal of which being connected to an output terminal of each of said first gate circuits, wherein an output signal from any of said first gate circuits is output from said second gate, a noise pulse having said second level and ending within an interval prior to a a following signal pulse, said interval being essentially shorter than said delay time of said delay circuit, said noise pulse input into one of said delay circuits being inhibited from being output through said associated first gate circuit, and said following signal pulse, of said second level input into another one of delay circuits earlier than said interval which is prior to a next incoming signal pulse, being allowed to be output through said associated first and second gate circuits.

4,800,305

PULL STRING MECHANISM IN A PULL STRING TYPE SOUND REPRODUCING DEVICE

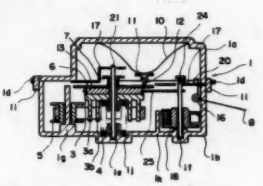
Eishi Kolke, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 192,325

Claims priority, application Japan, Apr. 30, 1987, 62-65575[U]

Int. Cl.[4] G11B *27/10, 3/78, 17/00*

U.S. Cl. 369—67 **2 Claims**



1. A pull string mechanism in a pull string type sound reproducing device comprising:

(a) a turn table supported by an upstanding shaft disposed in a casing, the casing having a pull out hole formed on a side face thereof below the level of a record disc, the turn table being capable of being rotatable an axially movable along said shaft,

(b) a speaker cone fixedly attached within said casing,

(c) a record disc integrally mounted with said turn table and having at least one spirally formed record groove, and having a starting point and an end point of sound reproduction,

(d) a tone arm being swingable along said record disc,

(e) a pickup carried by said tone arm so as to be in contact with a cone head of said speaker cone, the pickup being provided with a sound reproducing stylus which confronts with and contacts the record disc,

(f) a stylus force spring resiliently supporting said turn table and which imparts stylus force to said reproduction stylus through said turn table,

(g) a constant torque spring for urging said turn table toward the predetermined direction of rotation,

(h) a return spring for urging said tone arm toward the starting point of sound reproduction,

(i) a bobbin supported by said shaft, the bobbin being integral with said turn table and said record disc both in the axial direction and the direction of rotation, a pull out hole formed on the side face of said casing at a portion below the upper face of said record disc,

(j) a pull string one end of which attached to said bobbin and the other end being stretchable outside the casing through said pull out hole,

(k) a string supporting means for supporting said pull string at the portion between the bobbin and said pull out hole and at a level higher than the upper face of said record disc; and

wherein said string supporting means is resiliently movable only in an upward and downward direction and is disposed adjacent said pull out hole such that the path of the pull string from said pull out hole via the string supporting means and to said bobbin can follow a crank shaped path with the angle of turning being not larger than a right angle.

4,800,306

DEVICE FOR DAMPING THE OSCILLATIONS OF A STEPPING MOTOR

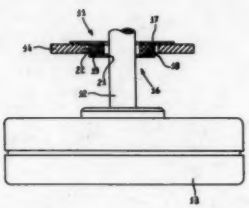
Massimo Oberto, Via Belvedere, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Apr. 10, 1987, Ser. No. 36,576

Claims priority, application Italy, May 19, 1986, 87410 A/86

Int. Cl.[4] H02K *5/24*

U.S. Cl. 310—51 **2 Claims**



1. A device for damping the oscillations of a stepping motor of the type wherein the stepping motor comprises a shaft, and the damping device comprises an external inertia element and a damping member, wherein the external inertia element comprises an inertial mass of metal material in the form of an annulus of limited thickness having a central hole with an internal cylindrical surface, wherein the damping member comprises a first circular flange to which the external inertia element is fixed by means of spot welding and having a central hole, an element of elastomeric material in the form of an annular portion which is housed in the central hole of the external inertia element with clearance with respect to the internal cylindrical surface of the central hole and to the external surface of the shaft, and a second circular flange having a hole by means of which the damping device is fixed to the shaft, wherein the elastomeric element is fixed between the first circular flange and the second circular flange, and wherein the external inertia element, the first circular flange, the elastomeric element and the second circular flange are parallel and coaxial with each other and also coaxial with respect to the shaft.

4,800,307

REPLACEABLE CIRCUIT BOARD MOUNTING SYSTEM IN OUTER ROTOR MOTORS

Georg Papst, St Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH, St. Georgen, Fed. Rep. of Germany

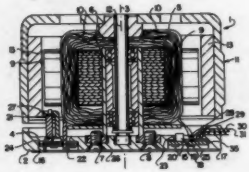
PCT No. PCT/EP86/00537, § 371 Date Jul. 14, 1987, § 102(e) Date Jul. 14, 1987, PCT Pub. No. WO87/01879, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 17, 1986, Ser. No. 67,787

Claims priority, application Switzerland, Sep. 18, 1985, 4035/85

Int. Cl.[4] H02K *29/00;* **H02P** *1/00*

U.S. Cl. 310—67 R **27 Claims**



1. An electric motor having a motor shaft and a flange disk that is arranged at right angles to the motor shaft; a stator fixed to an interior side of said flange disk; a control circuit means for the motor for which an insertible circuit board means is provided and arranged in a plane, parallel to the flange disk on the exterior side of the flange disk that faces away from the stator, said control circuit means providing electrical connection with control elements on the circuit board means which extend through the flange disk and cooperate with cooperating elements of the motor located on the interior side of the flange disk.

4,800,308

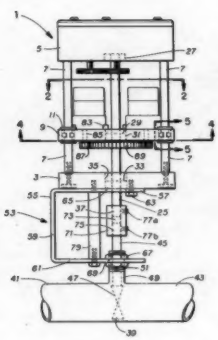
MOTORIZED CONTROL UNIT WITH TORSIONAL ELASTOMERIC BIAS

Bill Tice, Carlsbad, Calif., assignor to ETI Systems, Oceanside, Calif.

Filed Mar. 21, 1988, Ser. No. 170,885

Int. Cl.[4] H02K *7/10;* **F16K** *31/04;* **F16H** *57/12*

U.S. Cl. 310—83 **22 Claims**



1. A motorized control, for driving a rotatable shaft-actuated device, comprising:

(a) a base plate for mounting above the device;

(b) a top housing spaced above said base plate;

(c) a plurality of stiff legs extending between said base plate and said housing to hold them in fixed spacial relationship;

(d) a work plate intermediate said base plate and said top

housing, held in spaced-apart relationship therebetween through elastomeric means mounted thereto to permit torsional movement of said work plate with respect to said base plate;

(e) a rotatable drive shaft depending from said top housing through said work plate and said base plate terminating at a lower distal end adapted for connection to the rotatable actuation shaft of the device; and,

(f) a drive motor mounted on said work plate and containing an output shaft and pinion engaging the periphery of a central bull gear centrally mounted on said drive shaft including means for starting, stopping and reversing the rotation of said drive motor and drive shaft;

(g) wherein said elastomeric means is caused to deform and store energy when said drive motor is caused to overrotate said drive shaft at the end of rotational travel of the shaft-actuated device and twist said work plate with respect to said base plate so that, upon reverse travel of said drive shaft to drive the actuation shaft in the opposite direction, said elastomeric means returns to its normal shape and releases the stored energy into said drive shaft at the beginning of the reverse rotational movement.

4,800,309

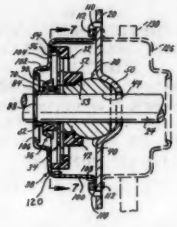
SELF-ALIGNING BEARING AND OIL CAP MOUNT FOR AN ELECTRIC MOTOR

Bryan L. Lakin, Springfield, Mo., assignor to Fasco Industries, Inc., Lake Forest, Ill.

Division of Ser. No. 806,028, Dec. 6, 1985, Pat. No. 4,711,590. This application Jul. 2, 1987, Ser. No. 69,116

Int. Cl.[4] H02K *7/08*

U.S. Cl. 310—90 **11 Claims**



1. In a dynamoelectric machine having a housing with an end shield at an end thereof and an oil cap secured to the end shield, comprising in combination: the end shield having a surface, the oil cap secured to the end shield, the end shield having circumferentially spaced protrusions extending out of the surface of the end shield and formed integrally therewith of the material of the end shield, the protrusions having edge means defining with the end shield surface a seat for the oil cap, the oil cap having an end surface that seats against the end shield surface and further having side surface means, the protrusions being deformed generally radially inwardly such that the edge means of the protrusions engage and overlie the side surface means of the oil cap to secure the oil cap to the end shield against both axial and rotational movement relative thereto, said protrusion positioned prior to deformation relative to the side surface means of the oil cap to allow ease of insertion of the oil cap within the close confines of the protrusions.

4,800,310

BICYCLE ERGOMETER AND EDDY CURRENT BRAKE THEREFOR

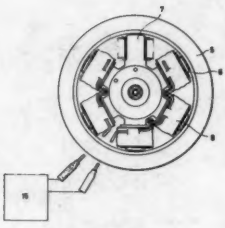
Shinroku Nakso, Kanagawa; Masao Itoh, Tokyo; Akira Itoh, Tokyo, and Hiroshi Takano, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Division of Ser. No. 588,933, Mar. 13, 1984, Pat. No. 4,678,182. This application Jun. 25, 1985, Ser. No. 748,675

Claims priority, application Japan, Jul. 8, 1983, 58-123172

Int. Cl.[4] H02K *7/02, 49/04*

U.S. Cl. 310—105 **2 Claims**



1. An eddy current brake comprising:

rotor means having a non-ferrous outer rotor and a cast iron inner rotor concentrically mounted within said outer rotor, said inner rotor being structural carbon steel pipe (STK and STKM) having a carbon content of 0.12% or less and a silicon content of 0.35% or less, said outer rotor providing a flywheel effect to said inner rotor;

a stator fixedly mounted radially inward of said rotor means;

a plurality of exciting coils disposed on said stator; and

power means for energizing said exciting coils.

4,800,311

ROTOR ASSEMBLY FOR HOMOPOLAR GENERATOR

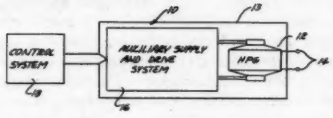
William F. Weldon; John H. Gully, and Mark A. Pichot, all of Austin, Tex., assignors to Board of Regents, Austin, Tex.

Continuation of Ser. No. 381,928, May 26, 1982, abandoned. This application Jul. 2, 1985, Ser. No. 751,459

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[4] H02K *31/02, 1/28*

U.S. Cl. 310—178 **8 Claims**



1. A homopolar generator, comprising:

a support structure;

a stator assembly inwardly disposed within said support structure for producing a stator magnetic field;

a shaft mounted in said support structure;

a rotor carried on said shaft, said rotor including two mating rotor halves together defining a recess in the peripheral surface of the rotor, for receiving the stator assembly to enclose the same;

an inner brush mechanism disposed within the recess in the rotor, for contacting a surface of the rotor defined by the recess to collect discharge current; and

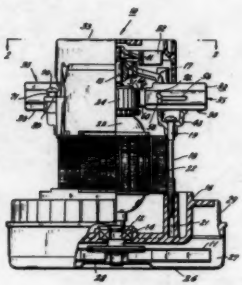
an outer brush mechanism disposed within the support structure, for contacting the peripheral surface of the rotor adjacent the recess to collect discharge current.

4,800,312

MOUNTING FOR BRUSHES OF ELECTRIC MOTORS

Rudolph W. Wacek, Montoursville, and R. Lent Crevling, Jr., Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed May 21, 1987, Ser. No. 53,147
Int. Cl.[4] H02K *13/00*
U.S. Cl. 310—239 16 Claims



1. An electric motor including:

an output shaft, frame means on which said shaft is mounted for rotation about a first axis, armature winding means on said shaft, commutator means on said shaft connected in circuit with said armature winding means, first and second brush-holder assemblies mounted on said frame means and in operative engagement with said commutator;

each of said brush-holder assemblies including an insulating tube, a conducting brush disposed within said insulating tube with a first end of said brush extending through an open front end of said insulating tube, and spring means biasing said brush in a generally radial direction with respect to said first axis to drive said first end of said brush through said first end into operative engagement with said commutator means;

each of said insulating tubes having a tubular axis extending in a generally radial direction with respect to said first axis and having bearing means defining a transverse pivot for said insulating tube, which pivot is transverse to said tubular axis, said frame means including first and second bearing formations that are operatively engaged by the bearing means of the respective first and second insulating tubes to cooperate therewith and define axes about which the brush-holder assemblies were pivoted into their final operating positions with respect to the frame means;

with said brush-holder assemblies in their said final operating positions, the insulating tubes thereof being maintained against pivotal movement about said bearing means and otherwise being maintained in fixed positions relative to said frame means;

first and second securing means on the frame for maintaining the respective first and second brush-holder assemblies in their said final operating positions;

said securing means being in operative engagement with said brush-holder assemblies at locations radially outward of said bearing formations;

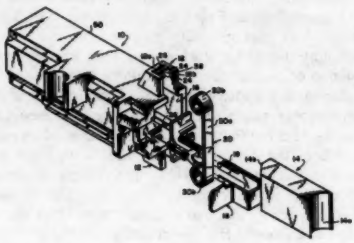
each of said first and second securing means comprising a screw including a stem threadably engaged with said frame and a head that engages a different one of said insulating tubes.

4,800,313

LONG-LIFE MOTOR BRUSH HOLDER

Robin L. Warner, Mt. Holly Springs, and Richard E. DeSisto, Carlisle, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 29, 1987, Ser. No. 113,849
Int. Cl.[4] H02K *13/00*
U.S. Cl. 310—242 9 Claims



1. A motor brush holder for use with a motor commutator, comprising:

a brush holder, having first and second ends, and a motor brush retained within said holder while adapted to bear agaist the motor commutator;

a ribbon spring for urging the brush against said commutator, said spring including a middle portion for resiliently engaging said brush and a pair of end coil portions retained within said holder;

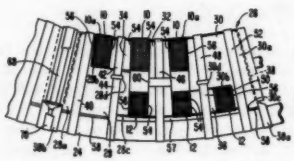
at least two pairs of spaced cylindrical surfaces forming part of said brush holder, a given pair serving as line contact supports for one of the respective coil portions of the spring, thereby to minimize contact of each coil portions with the holder and consequently reduce frictional drag.

4,800,314

DEEP BEAM SUPPORT ARRANGEMENT FOR DYNAMOELECTRIC MACHINE STATOR COIL END PORTIONS

Robert T. Ward, Winter Park, and John M. Butler, Orlando, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 24, 1987, Ser. No. 92,851
Int. Cl.[4] H02K *3/46*
U.S. Cl. 310—260 18 Claims



1. A coil support arrangement for use in connection with a dynamoelectric machine equipped with a stator having top and bottom winding coil end portions extending outwardly from the stator at each end thereof, said coil end portions being arranged in phase groups, said support arrangement comprising:

a support ring encircling the bottom winding coil end portions;

respective end blocking means providing lateral support for the coil end portions of each phase group to restrain vibra-

tional movement of the coil end portions during machine operation; and

banding means encircling the coil end portions of a phase group, said respective end blocking means and said support ring for holding the coil end portions, the blocking means and the support ring together, with the blocking means disposed in axial alignment with the ring, to thereby present a single, blocked, elongated phase group structure which extends circumferentially around the inside of the ring,

said blocking means comprising a plurality of individual block elements which are disposed in axial alignment with the ring and which extend the full radial depth of the phase group structure to provide deep beam strength characteristics to the structure.

4,800,315

AIR-COOLED ROTOR FOR ELECTRIC MOTOR

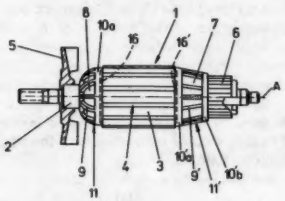
Manfred Schulz; Alfred Wagemann, both of Nurtingen, and Gerhard Waldner, Neckarhausen, all of Fed. Rep. of Germany, assignors to Metabowerke GmbH & Co., Nurtingen, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 97,710

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632771

Int. Cl.[4] H02K *5/12*; F01D *5/00*

U.S. Cl. 310—261 **10 Claims**



1. In combination with a rotor having:

a ferrous core extending along and centered on an axis and formed with axial slots;

a winding extending along the slots of the core and having opposite axial ends extending axially beyond the core; and

means for circulating air axially over the core and winding; the improvement comprising:

a plurality of ribs fixed to the rotor and winding and each extending at least generally axially and radially over at least one of the ends of the winding so as to project generally axially from the one end, the ribs being spaced apart on the one end such that the winding is exposed between the ribs.

4,800,316

BACKING MATERIAL FOR THE ULTRASONIC TRANSDUCER

Wang Ju-Zhen, Shanghai, China, assignor to Shanghai Lamp Factory, Shanghai, China

Continuation-in-part of Ser. No. 737,135, May 23, 1985, abandoned. This application Dec. 22, 1987, Ser. No. 140,934

Claims priority, application China, Apr. 1, 1985, 85100483

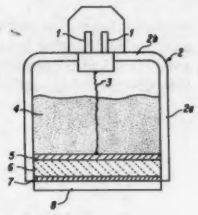
Int. Cl.[4] H01L *41/18*; H01B *1/22*; H04R *17/00*

U.S. Cl. 310—327 **9 Claims**

1. An ultrasonic transducer including a piezoelectric element, a backing element which acts as an attenuator for said piezoelectric element, a mating surface between said piezoelectric element and said backing element having approximately the same acoustic impedance as said piezoelectric element, said backing element consisting of a material in the form of a tungsten base composite comprising:

(a) tungsten

(b) an oxide of metal from the lanthanum group, and



(c) an insulating cement, said insulating cement present in said tungsten-metallic oxide composite by a ratio of 4:1 to 50:1% by total weight of said composite.

4,800,317

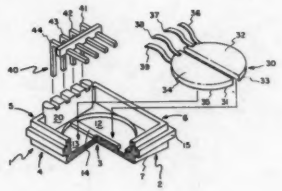
ULTRASONIC TRANSDUCER METHOD AND APPARATUS

Frank W. Ingle, and John P. Claude, both of Palo Alto, Calif., assignors to Medasonics, Inc., Mountain View, Calif.

Division of Ser. No. 895,274, Aug. 11, 1986, Pat. No. 4,691,418. This application May 22, 1987, Ser. No. 52,908

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—334 **11 Claims**



1. An ultrasonic transducer assembly comprising:

a body member having an end wall and a plurality of side walls, said end wall having a pair of exterior planar surfaces, each of said exterior planar surfaces extending from a centerline of said end wall outwardly to a side edge of said end wall at a predetermined angle relative to each other, an interior surface, and a pair of recesses located in said interior surface which are separated from each other by a central rib which extends along said centerline of said end wall, each of said recesses having a planar surface which is parallel to one of said exterior planar surfaces of said end wall, said side walls having an outwardly extending exterior rib which is located between the top and bottom surfaces thereof and which extends about the periphery thereof, one of said end walls which is located at one end of said central rib including a multiple pin receiving post which is integrally formed therewith and which extends perpendicularly from said interior surface of said end wall, said post having a plurality of equally spaced, tapered, pin receiving holes;

a pair of piezoelectric ceramic planar members, each of said members having a pair of conductive electrodes covering and affixed to opposite surfaces thereof, respectively;

a plurality of metal ribbons;

first means for attaching one of said ribbons to each of said electrodes, each of said ribbons having a length sufficient for it to be inserted well into a corresponding one of said

plurality of tapered holes in said multiple pin receiving post;

second means for attaching one of said pair of ceramic planar members to said planar surface in each of said recesses; and

a multiple pin connector having an electrically conductive pin inserted in each of said tapered holes in such a manner as to form a good electrical connection between said pin and the metal ribbon inserted in said hole.

4,800,318

ELECTRODE ASSEMBLY FOR ELECTROSTATIC LENS OF ELECTRON GUN

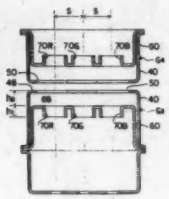
Kazuaki Naiki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 12, 1987, Ser. No. 13,676

Claims priority, application Japan, Feb. 12, 1986, 61-29363; Sep. 10, 1986, 61-214431

Int. Cl.[4] H01J 29/58

U.S. Cl. 313—414 **12 Claims**



1. An electrode assembly for an electrostatic lens of the in-line type electron gun for a color cathode ray tube, which includes a pair of tubular electroces, wherein the improvement is that each of the tubular electrodes includes a main tubular electrode member closed at its one end by an end wall which has an aperture of the configuration obtained by partially overlapping a plurality of circular openings arranged in an inline manner, and an auxiliary electrode member fitted into the main electrode member and having an end wall position separate from the end wall of the main electrode member by a predetermined distance, the end wall of the auxiliary electrode member being formed with a plurality of independent collars projecting therethrough in parallel to the axial direction of the respective circular openings of the overlapped-multicircle aperture and to superpose the corresponding circular openings of the overlapped-multicircle aperture in an axial direction, the pair of tubular electrodes being located in such a manner that the end walls of the respective main tubular electrode members oppost each other and are separate from each other, each of the main electrode members having an overlapped-multicircle aperture composed of three circular openings, a high potential side tubular electrode of the tubular electrode pair having its overlapped-multicircle aperture composed of circular openings whose diameters are smaller than the diameters of the circular openings of the overlapped-multicircle aperture of a low potential side tubular electrode.

4,800,319

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

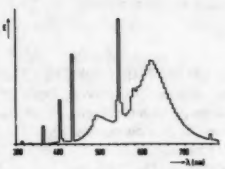
Johannes T. C. Van Kemenade; Johannes T. W. De Hair, both of Eindhoven, and Everhardus G. Berns, Geldrop, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 598,957, Apr. 11, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 814,284

Claims priority, application Netherlands, Apr. 25, 1983, 8301445

Int. Cl.[4] H01J 1/62, 63/04; C09K 11/08

U.S. Cl. 313—487 **15 Claims**



1. A low-pressure mercury vapor discharge lamp having a color rendering index R(a,8) of at least 85, a luminous flux of at least 55 l/mW a color temperature of the emitted white light in the range of 2300 to 3300 K. and a color point on or not greater than 20 Minimum Perceptible Color Difference from the point on the Planckian curve of the same color temperature and provided with a gas-tight radiation-transparent envelope containing mercury, a rare gas, a pair of spaced elctrodes for providing a discharge, a luminescent layer comprising:

a. at least one luminescent alkaline earth metal halophosphate activated by trivalent antimony and bivalent manganese and having a color temperature of the emitted radiation of 2900 to 5000 K.;

b. at least one luminescent material activated by bivalent europium with an emission maximum in the range of 470 to 500 nm and a half-value width of the emission band of at most 90 nm, and

c. a luminescent rare earth metal metaborate activated by trivalent cerium and bivalent manganese, having a monoclinic crystal structure, whose fundamental lattice corresponds to the formula $Ln(Mg,Zn,Cd)B_5O_{10}$, in which Ln is at least one of the elements yttrium, lanthanum and gadolinium and in which up to 20 mol.% of the B can be replaced by Al and/or Ga, which metaborate exhibits red Mn^{2+} emission, and

means for absorbing at least in part blue radiation having wavelengths below 480 nm.

4,800,320

DISCHARGE TUBE FOR A HIGH PRESSURE METAL VAPOR DISCHARGE LAMP AND A METHOD OF MANUFACTURING THE SAME

Takehiro Kajihara, Komaki; Senji Atsumi, Kakamigahara, and Hirotsugu Izumiya, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 757,506, Aug. 31, 1984, Pat. No. 4,687,969. This application May 28, 1987, Ser. No. 55,144

Claims priority, application Japan, Aug. 31, 1984, 59-183294

The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.

Int. Cl.[4] H01J 17/18, 61/36

U.S. Cl. 313—625 **11 Claims**

1. A discharge tube for a high pressure metal vapor discharge lamp, comprising:

a translucent alumina tubular body having first and second opposite end portions;

first and second end plates comprised of cermet, said cermet

having a firing shrinkage factor which is less than a firing shrinkage factor of the translucent alumina tubular body;

first and second electrode support members, said first support member being partially embedded in the first end plate and said second support member being partially embedded in the second end plate and each of said first and second electrode support members being located inside of the translucent alumina tubular body, said first end plate being fitted to the first opposite end portion of the translucent alumina tubular body and bonded thereto, said first opposite end portion being located at a lower position than the second opposite end portion when the high pressure metal vapor discharge lamp is in use, wherein bonding of the first end plate to the first opposite end portion is achieved by shrinkage fitting of the first end

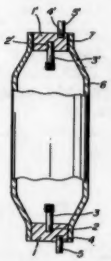


plate into the alumina tubular body at a shrinkage fitting ratio of the tubular body to the first end plate being from 3 to 6% during a simultaneous sintering of the first end plate to the translucent alumina tubular body and a simultaneous bonding of said first electrode support member to said first end plate through shrinkage fitting at a shrinkage fitting ratio of the first end plate to the first electrode support member being from 4 to 16%, said bonding occurring when the translucent alumina tubular body is fired to be translucent, said second end plate being fitted to the second opposite end portion of the translucent alumina tubular body and being bonded thereto by using a frit, said second opposite end portion being located at a vertically higher position than the first opposite end portion when the high pressure metal vapor discharge lamp is in use.

4,800,321

HIGH PRESSURE SODIUM LAMP

Yujiro Ike, Yokohama; Akihiro Yonezawa; Shinichi Ooshima, both of Yokosuka; Akihiro Kamiya, Yokohama, and Yoshio Hirose, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 5, 1987, Ser. No. 81,728

Claims priority, application Japan, Aug. 5, 1986, 61-182648

Int. Cl.[4] H01J *61/20, 17/22*

U.S. Cl. 313—639 **5 Claims**

1. A high pressure sodium lamp for operation under a prescribed electric field strength, comprising:

an arc tube having an inner diameter; and

an amalgam including a prescribed quantity of sodium and mercury sealed in the arc tube, the amalgam substantially satisfying the following relationship:

$$(10^{0.848\phi(-0.171)} \log X+(0.105\phi-10.22))$$

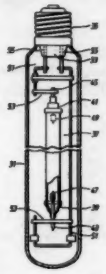
$$<\log Y<$$

$$(10^{0.848\phi(-0.171)} \log X-10^{1.43\phi(-0.574)}),$$

and the field strength satisfying the following relationship:

$$(-7.97 \log\phi+14.8)<\log \Delta V<(84.7 \log \phi-84.5),$$

where ϕ (mm) is the inner diameter of the arc tube and is greater than 12 mm, X (wt%) is the ratio of the quantity of



sodium to the quantity of amalgam sealed in the arc tube, Y (mg/cc) is the quantity of the sodium sealed in the arc tube, and ΔV (v/cm) is the electric field strength when the lamp is operated.

4,800,322

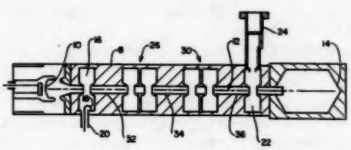
BROADBAND KLYSTRON CAVITY ARRANGEMENT

Robert S. Symons, Los Altos, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 663,801, Oct. 23, 1984, abandoned. This application Oct. 1, 1987, Ser. No. 106,976

Int. Cl.[4] H01J *25/10*

U.S. Cl. 315—5.39 **16 Claims**



1. In a klystron operating within a predetermined bandwidth or passband, and having means for producing an electron stream along the length thereof including through the section providing gain at least one input cavity having means for introducing microwave energy into said klystron, and at least one output cavity for extracting microwave energy therefrom, the cavities being separated by drift tubes of predetermined drift lengths, the improvement comprising:

a plurality of floating cavity clusters positioned along and coupled only to said electron stream between said input and output cavities, each of said clusters comprising a plurality of juxtaposed cavities having closely spaced interaction gaps; and

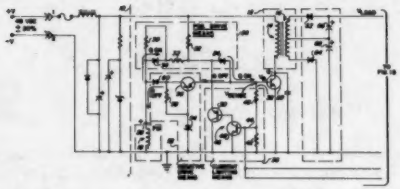
the drift lengths between said clusters being greater than the drift length between adjacent cavities of the individual clusters.

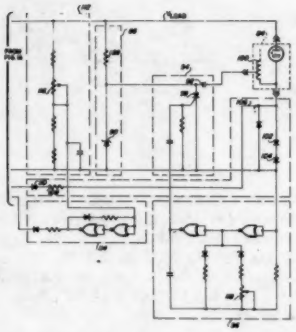
4,800,323

SINGLE-ENDED SELF-OSCILLATING DC-DC CONVERTER FOR INTERMITTENTLY ENERGIZED LOAD HAVING V_{BE} RESPONSIVE CURRENT LIMIT CIRCUIT

Scott T. Sikora, Mesa, Ariz., assignor to Tomar Electronics, Inc., Tempe, Ariz.

Continuation of Ser. No. 794,415, Nov. 4, 1985, Pat. No. 4,682,081. This application Jul. 17, 1987, Ser. No. 74,697
The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.
Int. Cl.[4] H05B *41/29, 41/34*
U.S. Cl. 315—219 **20 Claims**





1. Apparatus for delivering current to an intermittently energized load comprising:

a. a coupled inductor including a primary winding a secondary winding and a feedback winding;

b. a switching transistor having base, collector and emitter terminals and a base-emitter junction and being coupled in series with said primary winding for switching between conductive and non-conductive states to control the flow of current through said primary winding;

c. a positive drive supply coupled between said feedback winding and the base of said switching transistor and energized by said feedback winding for providing a positive bias voltage to said switching transistor to switch into and maintain said switching transistor in the conductive state to transfer energy into said inductor;

d. a current limiting circuit for removing the positive bias voltage from said switching transistor when the primary winding current reaches a predetermined value to thereby switch said switching transistor out of the conductive state and into the non-conductive state, said current limiting circuit including

i. a semiconductor switch having a control lead with a threshold voltage;

ii. a voltage divider coupled across the base-emitter junction of said switching transistor for applying a scaled output voltage to the control lead of said semiconductor switch to cause said semiconductor switch to conduct when the base-emitter voltage of said switching transistor reaches a predetermined current limit voltage representative of a preselected switching transistor collector current limit;

iii. said semiconductor switch shunting the positive bias voltage away from the base of said switching transistor when the voltage on the control lead rises above the threshold voltage to switch said transistor out of the conductive state and into the non-conductive state; and

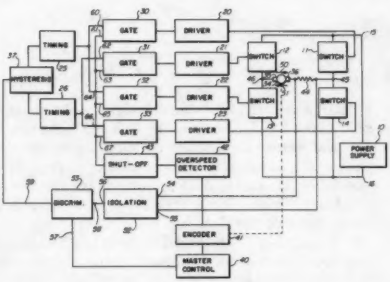
e. a load coupled to said secondary winding for receiving energy stored in said inductor after said switching transistor is switched into the non-conductive state by said current limiting circuit.

4,800,324

BRUSH MOTOR AMPLIFIER WITH OVERSPEED PROTECTION

Ralph Kuttner, Fullerton, Calif., assignor to Steel Casting Engineering, Ltd., Orange, Calif.

Filed Nov. 19, 1986, Ser. No. 932,663
Int. Cl.[4] H02P *5/06*
U.S. Cl. 318—293 **3 Claims**



1. An amplifier control system for controlling the armature current of a DC brush motor comprising:

a supply of DC operating voltage;

a first pair of current switching deivces connecting to said voltage supply and said DC brush motor for driving said motor in a first direction;

a second pair of current switching devices connecting to said voltage supply and said DC brush motor for driving said motor in a second direction;

a plurality of driver circuits connected to each of said current switching devices in said first and second pairs;

a gate circuit operative upon the driver circuits to provide switching signals for operation of said first and second pairs of current switching devices;

speed sensing means for sensing the speed of the armature rotation of said DC brush motor, said speed sensing means including an encoder coupled to said brush motor for producing an output signal indicative of the motor speed and comparison means comparing said encoder signal to a predetermined maximum motor speed for establishing a reference voltage corresponding to a predetermined maximum motor speed threshold; and

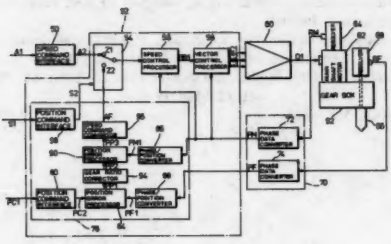
shut off means, coupled to said comparison means, operative upon said gate circuit to interrupt said first and second current switching devices in the event the motor speed exceeds said predetermined maximum motor speed threshold,

said gate circuit including a plurality of gates each having one input commonly connected to said shut-off means.

4,800,325
SPINDLE POSITIONING APPARATUS

Yoshinori Nakanishi, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1987, Ser. No. 3,281
Claims priority, application Japan, Jan. 17, 1986, 61-6396
Int. Cl.[4] G05B 1/06
U.S. Cl. 318—661 11 Claims



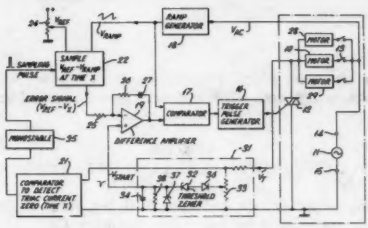
1. A spindle positioning apparatus comprising:
an absolute angle detector operatively coupled to a spindle motor, said absolute angle detector comprising a first resolver;
a spindle drivable by the spindle motor;
an absolute position detector operatively coupled to said spindle, said absolute position detector comprising a second resolver; and
a position control processing system for deriving a positional error from detected signals from said absolute angle detector and a target position command signal whereby said spindle can be accurately and quickly positioned, said position control processing system further comprising,
a first position error processor for deriving a positional error of said spindle from a spindle position command signal and the detected signal from said absolute position detector and for generating a position error signal indicative of the position of said spindle; and
a second position error processor for deriving a deviation between said spindle motor and said spindle from the detected signal from said absolute angle detector and from a signal based on said position error signal from said first position error processor.

4,800,326
APPARATUS AND METHODS FOR CONTROLLING INDUCTION MOTORS

Peter J. Unsworth, Lewes, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 770,012, Aug. 28, 1985, abandoned, which is a continuation of Ser. No. 305,735, Sep. 25, 1981, abandoned. This application Jun. 6, 1986, Ser. No. 873,454
Claims priority, application United Kingdom, Sep. 26, 1980, 8031129; Feb. 6, 1981, 8103681; Jun. 29, 1981, 8119931
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—729 19 Claims

1. A power controller for an induction motor which is coupled to an alternating current supply operating at a predetermined frequency, comprising:
at least one SCR device, each said SCR device connected between a phase of said alternating current supply and the induction motor to be energized from the supply, one SCR device being provided for each phase of the supply, each said SCR device also including a trigger input for trigger signals for turning on said SCR device;
ramp generating means for generating a ramp waveform with a frequency double said predetermined frequency of said alternating current supply;
means for detecting zero crossings of a voltage waveform of one phase of said alternating current supply;
synchronizing means, connected to said ramp generating means, for synchronizing zero crossings of said ramp waveform with said zero crossings in the voltage waveform of said one phase of the alternating current supply;
detecting means, coupled to said phase of said alternating current supply, for detecting when a current in said one phase of the supply ceases;
sample and hold means, coupled to said ramp generating means and said detecting means, for sampling and holding a voltage of said ramp waveform from said ramp generating means each time said current cessation is detected, said sampled and held voltage being a monitoring signal, proportional to intervals between said zero crossing of said



voltage waveform in said one phase of the supply, and a cessation of current in said one phase which preceeds current reversal therein;
a first comparator, connected to said sample and hold means, for comparing said monitoring signal with a reference signal to derive an error signal indicative of a difference between said error signal and said reference signal; and
control means, connected to said SCR devices and to said first comparator, for generating said trigger signals to said SCR devices responsive to said error signal, to change a time relationship between a waveform of the supply and the trigger signals in a direction to shorten a period of conduction of the switching means when said interval increases, and lengthen said period of conduction when said interval decreases.

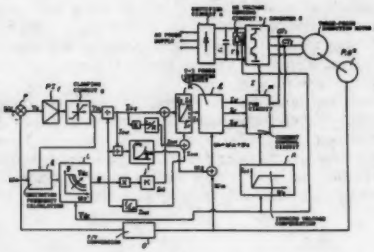
4,800,327
THREE-PHASE INDUCTION MOTOR CONTROL METHOD

Yoshiki Fujioka, Higashiyamato, and Shinichi Kouno, Hino, both of Japan, assignors to Fanuc Ltd, Yamanashi, Japan

PCT No. PCT/JP86/00187, § 371 Date Dec. 15, 1986, § 102(e) Date Dec. 15, 1986, PCT Pub. No. WO86/06227, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 15, 1986, Ser. No. 2,405
Claims priority, application Japan, Apr. 16, 1985, 60-79257
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—798 12 Claims

1. A three-phase induction motor control method for vector control of a three-phase induction motor by an output from an inverter to which is applied a direct current obtained by conversion from an AC input, said method comprising the steps of:
(a) sensing voltage at a DC link section which converts the AC input voltage into the direct current;
(b) increasing a flux command above a base velocity and raising an amplitude of a PWM current control circuit signal with respect to a triangular wave applied to the PWM circuit to raise motor terminal voltage, when the voltage of the DC link section, which is proportional to said AC input voltage, is low compared to desired motor terminal voltage;
(c) decreasing the flux command from a region below the base velocity and reducing the amplitude of the PWM

circuit signal with respect to said triangular wave to lower the motor terminal voltage, when the voltage of the DC



link section, which is proportional to said input AC voltage, is high compared to desired motor terminal voltage.

4,800,328

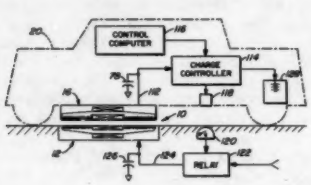
INDUCTIVE POWER COUPLING WITH CONSTANT VOLTAGE OUTPUT

John G. Bolger, Orinda, and Lang S. B. Ng, Berkeley, both of Calif., assignors to Inductran Inc., Berkeley, Calif.

Continuation of Ser. No. 887,242, Jul. 18, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 166,733

Int. Cl.[4] H02J *7/00*

U.S. Cl. 320—2 **20 Claims**



1. A constant voltage inductive power coupling for magnetically transferring electrical power from a power source through an air gap to a load, the coupling comprising:

electromagnetic means with substantial leakage reactance, responsive to the power source to generate a shaped alternating magnetic field;

a saturable core in spaced-apart relationship to the electromagnetic means to define an air gap there between and magnetically coupled thereto to receive mutual flux of the shaped magnetic field, the core having enlarged poles and a region of reduced cross sectional area such that the region is in a state of magnetic saturation when the amount of magnetic flux that is required to induce the desired constant output voltage is present in the core, thereby tending to limit the output voltage to the desired constant voltage and counteracting any excess electromagnetic force in the electromagnetic means by causing leakage flux from the electromagnetic means;

a coil, electromagnetically coupled to the core whereby the magnetic field induces voltage in the coil, the voltage determined by the amount of magnetic mutal flux in the core, said saturable core also providing an inductive component of leakage flux which varies in response to any change in input voltage to said electromagnetic means to magnetically counteract an associated change in said field so as to maintain the core in its state of saturation thereby tending to keep the output voltage from said coil constant; and

a capacitor in electrical communication with said coil to form therewith a tuned circuit that is below resonance at operating frequency when said core is in its saturated state, any increase in output current being associated with a closer approach of the circuit to a resonant condition and thereby tending to maintain the output voltage at a constant level.

4,800,329

DEVICE FOR LIMITING INRUSH CURRENT

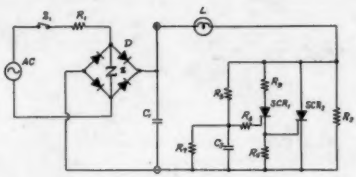
Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan

Continuation of Ser. No. 1,625, Jan. 5, 1987, abandoned. This application May 23, 1988, Ser. No. 198,487

Claims priority, application Japan, Feb. 10, 1986, 61-27513

Int. Cl.[4] H02H *9/02*

U.S. Cl. 323—242 **7 Claims**



1. A device for limiting inrush current comprising

a rectifier circuit comprising a rectifier and smoothing means;

a first resistor means to limit the inrush current that may arise in a lamp, said resistor means being connected with a dc side of said rectifier circuit through said lamp;

a second resistor means to cause a loss to the arc discharge current that may arise in said lamp on its outage, said second resistor means being connected at an ac side of said rectifier circuit;

a main controlled rectifier having its main current path connected in parallel with said first resistor means;

a secondary controlled rectifier having its main current path connected with a gate of said main controlled rectifier; and

a delay circuit having an output connected with a gate of said secondary controlled rectifier in such manner that said rectifier circuit energizes said lamp through said first resistor means over a time as predetermined by a time constant of said delay circuit.

4,800,330

AC POWER CONTROL

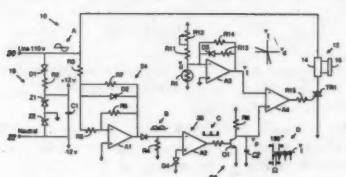
Kosta Pelonis, R.R. #2

Filed Apr. 6, 1987, Ser. No. 34,602

Claims priority, application Canada, Jul. 8, 1986, 513356

Int. Cl.[4] G05F *1/455*

U.S. Cl. 323—243 **5 Claims**



1. A device for regulating delivery of ac power from an ac voltage source to a load in response to changes in the state of a predetermined condition, the ac voltage source having an instantaneous phase angle, the device comprising: a switching

means for controlling flow of current through the load in response to the ac voltage, the switching means having a conductive state in which the switching means permit flow of current through the load and a non-conductive state in which the switching means prevent flow of current through the load, the switching means requiring application of a triggering signal in each half cycle of the ac voltage to assume the conductive state;

phase angle signal generating means responsive to the ac voltage for generating a phase angle signal corresponding to the instantaneous phase angle of the ac voltage relatie to the most recent zero crossover of the ac voltage;

sensor means for sensing the current state of the predetermined condition, the sensor means comprising a sensor whose resistance varies with the current state of the predetermined condition;

threshold signal generating means responsive to the sensor means for generating a threshold signal varying with the sensed current state of the predetermined condition, the threshold signal generating means comprising:

(a) means defining a voltage divider, the sensor being an element of the voltage divider;

(b) dc supply means adapted to be powered by the ac voltage for so applying a dc voltage to the voltage divider that a divider voltage whose magnitude is dependent on the resistance of the sensor is generated; and

(c) amplifier means for amplifying the divider voltage; and,

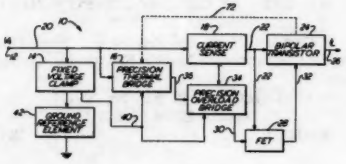
comparison means for comparing the phases angle signal with the threshold signal and for applying a triggering signal to the switching means whenever the phase angle signal corresponds to the threshold signal.

4,800,331

LINEAR CURRENT LIMITER WITH TEMPERATURE SHUTDOWN

Richard V. Vesce, East Hampton, Conn., and Andrew C. Reck, St. Joseph, Mich., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 12, 1987, Ser. No. 13,758
Int. Cl.[4] G05F *1/573*
U.S. Cl. 323—277 **8 Claims**



4. A current limiter for limiting load current delivered from an input voltage source to a load:

current sensing means, responsive to the input voltage source for conducting the load current and providing a sensed signal indicative of the magnitude thereof;

control means, responsive to the magnitude of the sensed signal for providing a control signal for controlling the magnitude of the load current; and

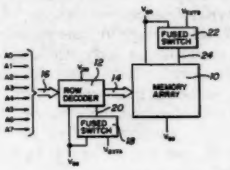
a solid-state series pass element, responsive to the load current and responsive to said control signal for providing said load current by operating in its saturation region for load currents less than a selected magnitude and in its linear region for load currents greater than said selected magnitude.

4,800,332

RECONFIGURABLE INTEGRATED CIRCUIT WITH ENHANCED TESTABILITY OF MEMORY CELL LEAKAGE

Charles L. Hutchins, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 709,266, Mar. 7, 1985. This application Dec. 5, 1986, Ser. No. 938,213
Int. Cl.[4] G01R *31/28*; G11C *7/00*
U.S. Cl. 324—73 R **3 Claims**



1. An integrated circuit, comprising:

a bias node for receiving a voltage from a bias supply;

a plurality of memory cells, each comprising a capacitor having a first plate connected to said bias node and having a second plate;

sensing means for sensing the contents of a memory cell;

means for addressing one of said memory cells responsive to an address signal, said addressing means connecting the second plate of the addressed memory cell to said sensing means;

means for isolating said bais node from said external bias supply, so that said bias supply may be applied to other portions of said integrated circuit while not being applied to said bias node;

a test voltage terminal for receiving a test voltage, said test voltage terminal connected to said bias node so that the operation of said circuit with a voltage at said first plate of said memory cell capacitors different from the voltage of said bias supply may be tested;

means for disconnecting said test voltage terminal from said bias node; and

means for disabling said isolating means, so that said first plates of said memory cell capacitors may be biased by said bias supply in the operation of said integrated circuit when said isolating means is disabled.

4,800,333

SWITCHED-CAPACITOR WATTHOUR METER CIRCUIT HAVING REDUCED CAPACITOR RATIO

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 947,114, Dec. 29, 1986, abandoned. This application Jun. 24, 1988, Ser. No. 212,115
Int. Cl.[4] G01R *21/127, 21/133*
U.S. Cl. 324—142 **15 Claims**

1. An electronic circuit for measuring energy consumption in an electrical system comprising:

input means for first and second signals representative, respectively, of current and voltage in the electrical system;

multiplying means for multiplying the first and second signals to provide a product signal representative of power being supplied by the electrical system;

said multiplying means comprising a time division multiplier including sampling means for sampling one of said first and second siganls and for providing samples proportional to the instantaneous value of current or voltage represented by said one signal, and switching means receiving the other of said first and second signals and an inverted form of said other signal, the switching means being controlled by said samples so as to switch between said other

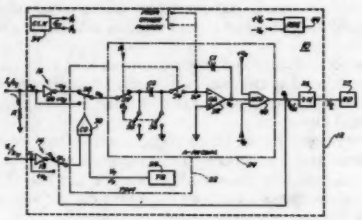
signal and the inverted form of said other signal to produce said product signal;

said sampling means comprising sampling signal generating means for generating a triangular waveform sampling signal, and means for comparing the amplitude of said one of the first and second signals to the sampling signal to produce said samples, the samples comprising pulses having a pulse width that is proportional to said amplitude;

said sampling signal generating means comprising a switched-capacitor integrator for providing at an output thereof said triangular waveform sampling signal, another switching means for alternately applying one of positive and negative reference voltages to an input of the switched-capacitor integrator, and comparator means for comparing the triangular waveform sampling signal from the switched-capacitor intergrator alternately with said one of the positive and negative reference voltages and for controlling said other switching means;

switched-capacitor integrator means for integrating the product signal and for providing an integrated signal representative of average energy;

converting means for converting the integrated signal into a first train of signal pulses; and



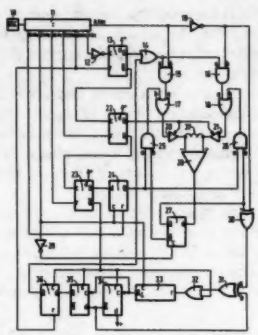
divider means for dividing the first train of signal pulses by a preselected ratio and for providing a second train of output signal pulses, each output signal pulse representing a predetermined amount of electrical energy consumed in the electrical system, said switched-capacitor integrator means comprising an amplifier having a first capacitor connected between an output and an input of the amplifier, a second capacitor, first switching means for alternately connecting the second capacitor to the multiplying means and to the input of said amplifier, second switching means for alternately connecting and disconnecting the second capacitor to and from ground, and clock generator means for supplying first and second clock signals for respectively controlling said first and second switching means, the clock signals being non-overlapped and out of phase, and the output signal of said amplifier being a ramp voltage having a time constant which is a function of the ratio of the values of said first capacitor to said second capacitor, said ratio of the values of said first capacitor of said second capacitor being inversely proportional to the preselected ratio by which said divider means divides said first train of pulses and limited to maintaining said first and second capacitor values within the same order of magnitude.

4,800,334

METHOD OF ANALYZING THE VOLTAGE INDUCED IN AN EXCITER COIL OF A STEPPING MOTOR

Jean-Claude Berney, Epalinges, Switzerland, assignor to U.S. Philips Corp., New York, N.Y.

Continuation-in-part of Ser. No. 516,021, Jul. 22, 1983, abandoned. This application Aug. 27, 1986, Ser. No. 900,861
Claims priority, application Netherlands, Aug. 4, 1982, 8203094
Int. Cl.[4] G01R 31/02; G04F 5/00; G06F 1/04
U.S. Cl. 324—158 MG 36 Claims



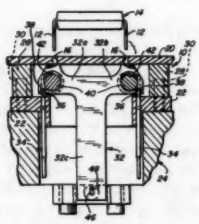
1. A method of analysing the voltage induced in an exciter coil of a stepping motor in detection periods which occur after energization of the exciter coil, said method comprising: energizing the exciter coil with a drive pulse for a given period, defining detection periods after the energizing periods, loading the exciter coil in said detection periods with an impedance so that an induction voltage developed can produce an induction current, detecting the polarity of the current in the exciter coil at periodic instants during said detection period, energizing the exciter coil in accordance with the detected polarity with a voltage of a polarity such that the instantaneous current in the exciter coil is counteracted, and analyzing the polarity pattern of consecutive energizations during said detection periods to provide an indication of the motor response to the drive pulses.

4,800,335

TEST FIXTURE FOR CIRCUIT COMPONENTS ON CIRCUIT BOARDS

Fernando E. Davila, Chicago, and Richard G. Schmid, Glenview, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 28, 1987, Ser. No. 55,471
Int. Cl.[4] G01R 31/02
U.S. Cl. 324—158 F 18 Claims



1. A test fixture for determining proper or improper insertion of a pair of contact pins on a circuit component through a

pair of mating sockets in a printed circuit board or the like, comprising:

support means mounted beneath the circuit board;

a single detection member movably mounted on said support means beneath said sockets for engagement by the contact pins upon proper insertion through the sockets, the single detection member being movable from a first position whereat neither contact pin is in engagement therewith to either a second position in response to both contact pins coming into engagement therewith or a third position in response to only one contact pin coming into engagement therewith; and

signal means operatively associated with said single detection member for producing a signal only when the detection member is in said second position whereat both contact pins are in engagement therewith after proper insertion through the sockets in the circuit board.

4,800,336

BATTERY LEVEL INDICATOR SUPPLYING DATA FROM A MEMORY TO A DISPLAY IN A POWER-OFF STATE

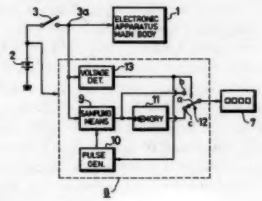
Tsutomu Mikami, Saitama, and Masaaki Kojima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,399

Claims priority, application Japan, May 21, 1986, 61-116819

Int. Cl.[4] G10N *27/02*

U.S. Cl. 324—426 **2 Claims**



1. A battery level indicator for use with an electronic apparatus comprising:

(a) voltage detection means for detecting the application of power to said electronic apparatus from a battery, for producing an output signal in response to such application of power.

(b) sampling means connected to said electronic apparatus for sampling the value of voltage applied thereto from said battery.

(c) memory means connected to said sampling means for storing data corresponding to the voltage level applied to said electronic apparatus,

(d) an indicator for displaying data, and

(e) data supplying means connected to and responsive to said voltage detecting means for supplying real time voltage data from said sampling means to said indicator while said battery is applying power to said electronic apparatus, and for supplying voltage data from said memory means to said indicator when said battery is not applying power to said electronic apparatus.

4,800,337

METHOD AND MEANS FOR DETERMINING A MEASURE OF THE SURFACE POTENTIAL OF A MEDIUM CHARGED BY MEANS OF A CORONA CHARGING DEVICE

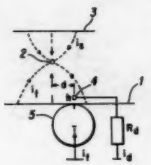
Jan. J. F. M. Cox, Helden-Beringe, and Hendrik Ensing, Velden, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Jun. 27, 1986, Ser. No. 879,477

Claims priority, application Netherlands, Jul. 1, 1985, 8501886

Int. Cl.[4] G01R *29/12*

U.S. Cl. 324—455 **6 Claims**



1. A method for determining a surface potential value (E) of a charged medium from a wire current (i_d) collected by a measuring wire, wherein a charge is emitted by at least one corona electrode and a first portion of the charge comprises a charge current (i_f) which is deposited on a surface of the charged medium giving it the surface potential value (E), and wherein the measuring wire is disposed near the surface of the charged medium to collect a second portion of the charge emitted by the corona electrode which comprises the wire current (i_d), said method comprising the steps of:

(a) determining a value of the wire current (i_d);

(b) determining a value for an apparent surface voltage (ASV) from the wire current (i_d);

(c) determining a value of the charge current (i_f);

(d) determining a correction C according to a first predetermined relationship between the correction C and the charge current (i_f), correction C varying as the charge current (i_f) varies; and

(e) determining the surface potential value (E) from the apparent surface voltage value (ASV) and correction C.

4,800,338

PULSE COUNT TYPE FM DEMODULATOR

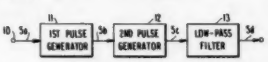
Shigeo Yoshizawa, and Eiichi Ishii, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,179

Claims priority, application Japan, Jun. 28, 1986, 61-150662

Int. Cl.[4] H03D *3/04*; H03K *9/06*

U.S. Cl. 329—103 **26 Claims**



1. A frequency modulation (FM) demodulator comprising:

limiter means for converting an input signal into a first signal having a rectangular waveform;

first pulse generator means responsive to rising and falling edges of said first signal for generating a first pulse train having first and second states whose combined duration is equal to the period of said first signal, said first state having a first predetermined duration;

second pulse generator means, responsive to said first pulse train, for generating a second pulse train having third and fourth states whose combined duration is equal to the period of said first signal, a duration of said third state being equal to said first predetermined duration reduced

by a time length proportional to the duration of said second state of said first pulse train; and

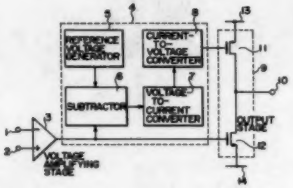
low-pass filter means for integrating said second pulse train to provide a demodulated signal.

4,800,339

AMPLIFIER CIRCUIT

Hiroshi Tanimoto, Kawasaki, and Hisashi Yamada, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1987, Ser. No. 79,141
Claims priority, application Japan, Aug. 13, 1986, 61-190104
Int. Cl.[4] H03F *3/45, 3/26*
U.S. Cl. 330—253 **13 Claims**



1. An amplifier circuit comprising:

a voltage-amplifying stage for amplifying the voltage of an input signal;

a drive stage having reference voltage-generating means for generating a predetermined reference voltage, subtracting means for generating a voltage equal to a difference between said reference voltage and an output voltage of said voltage-amplifying stage, which is based on the first pole-potential of a power supply, and signal-converting means for converting the voltage generated by said subtracting means to a voltage signal based on the second pole-potential of the power supply; and

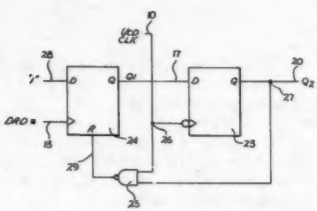
an output stage including a push-pull circuit comprised of at least one complementary pair of output transistors, one of said output transistors being driven by the voltage signal output from said signal-converting means, and the other of said output transistors being driven by the output voltage of said voltage-amplifying stage.

4,800,340

METHOD AND APPARATUS FOR GENERATING A DATA RECOVERY WINDOW

Peter Maimone, Irvine, and Richard G. Yamasaki, Torrance, both of Calif., assignors to Silicon System, Ins., Tustin, Calif.

Filed Apr. 22, 1987, Ser. No. 41,728
Int. Cl.[4] H03L *7/00*
U.S. Cl. 331—1 A **19 Claims**



1. A circuit for providing a programmable decode window generator comprising:

clock generating means for generating a first clock signal having a period and having a first transition point in said period of said first clock signal;

data synchronizing means coupled to a delayed read data (DRD) signal and said first clock signal, said DRD having a mean center position, said data synchronizing means for locking said DRD signal to said first clock signal;

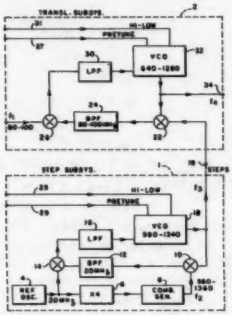
programming means coupled to said clock generating means for shifting said first transition point to coincide with said mean center position without altering said period of said first clock signal.

4,800,341

FAST SWITCHING FREQUENCY SYNTHESIZER

Edgar A. Johnson, Tujunga, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 2, 1987, Ser. No. 115,027
Int. Cl.[4] H03L *7/16*
U.S. Cl. 331—2 **15 Claims**



1. A frequency generator comprising:

reference frequency means for providing a reference signal of stable frequency and phase;

frequency multiplier means receiving said reference signal for providing a signal having a multiplied frequency that is at least four time said reference frequency;

voltage controlled oscillator means (VCO) for providing an AC signal whose frequency is of the same order of magnitude as said multiplied frequency and is controllable by a DC control voltage at a control terminal, said AC signal being perturbed by some phase noise that is manifested as phase angle excursions of said AC signal;

heterodyne means receiving (a) said VCO AC signal and said noise and (b) said multiplied frequency signal, for providing a down-converted signal and phase noise of undivided phase angle excursions, whose frequency is the difference of the frequencies of said VCO and multiplied signals;

phase comparator means receiving

(c) said reference signal and

(d) said down-converted signal and said phase noise of undivided phase angle excursions,

for providing a phase error signal indicative of the phase difference between said reference and down-converted signals; and,

filter means receiving said phase error signal for providing said DC control voltage, with predetermined bandwidth and loop again, to said control terminal of said VCO;

whereby a phase lock loop is established in which the phase noise perturbing said VCO signal is effectively translated to the phase comparator means with undivided phase angle excursions, to enable corrective feedback of the phase lock loop to effectively reduce the noise.

4,800,342

FREQUENCY SYNTHESIZER OF THE FRACTIONAL TYPE

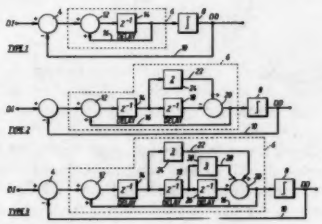
Thomas Jackson, Hanwell, Great Britain, assignor to Plessey Overseas Limited, Ilford, England PCT No. PCT/GB86/00090 § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05045, PCT Pub. Date Aug. 28, 1986

PCT filed Feb. 21, 1986, Ser. No. 925,632

Claims priority, application United Kingdom, Feb. 21, 1985, 8504542

Int. Cl.[4] H03L 7/00

U.S. Cl. 331—10 8 Claims



1. A frequency synthesiser of the fractional N type comprising a voltage controlled oscillator for producing an output signal which is afforded to a phase detector via a variable divider to provide a control signal for the voltage controlled oscillator in the presence of a phase difference between a reference signal from a reference source and the signal afforded from the variable divider wherein the division ratio of the variable divider is set in dependence upon the output of an interpolator arrangement comprising combiner means for receiving a digital input, digital controller means for receiving an output from the combiner means, digital slicer means for receiving an output from the digital controller means, and feedback means for affording the output of the digital slicer means to a component of the synthesiser for varying the division ratio of the variable divider, the said digital controller means comprising summing means for receiving the output from the said combiner means, delay means coupled to the said summing means, and a feedback loop for affording the output of the delay means to the said summing means.

4,800,343

DC CUTTING CIRCUIT

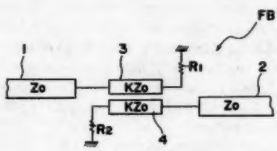
Humiaki Kinoshita, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 7, 1987, Ser. No. 47,196

Claims priority, application Japan, May 9, 1986, 61-106998

Int. Cl.[4] H01P 1/20, 5/02

U.S. Cl. 333—24 C 4 Claims



1. A DC cutting circuit for passing a signal having a selected wavelength from input side circuitry to output side circuitry while cutting from said signal any DC component therein, which comprises

a resonator electrode having an electrical length of ¼ wavelength at said selected wavelength and formed at a forward open end of a micro-strip line connected to said input side circuitry, and

another resonator electrode also having an electrical length of ¼ wavelength at said selected wavelength and formed at a forward open end of a micro-strip line connected to said output side circuitry,

said resonator electrodes being disposed in a parallel spaced relation to each other so as to couple said input side circuitry with said output side circuitry by said two resonator electrodes;

wherein at least the resonator electrode connected to the input side circuitry is terminated by a resistor member at said forward open end thereof.

4,800,344

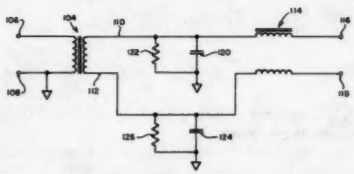
BALUN

Martin H. Graham, Berkeley, Calif., assignor to And Yet, Inc., Berkeley, Calif.

Continuation of Ser. No. 795,374, Nov. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 715,129, Mar. 21, 1985, Pat. No. 4,717,896. This application Aug. 27, 1987, Ser. No. 109,348

Int. Cl.[4] H03H 7/42

U.S. Cl. 333—25 4 Claims



1. A balun which substantially attenuates common mode signals without significantly attenuating differential mode signals for coupling an at least partially unbalanced line having at least a first and a second conductor to a balanced line having at least a first and a second conductor, comprising:

a first inductance adapted to have a first lead coupled to said first conductor of said unbalanced line and adapted to have a second lead coupled to said second conductor of said unbalanced line;

a second inductance sharing a common core with said first inductance and having a substantially equal value to said first inductance;

a third inductance having a first coupled to a first lead of said second inductance and adapted to have a second lead coupled to said first conductor of said balanced line;

a fourth inductance having a first lead coupled to a second lead of said second inductance and adapted to have a second lead coupled to said second conductor of said balanced line, said fourth inductance sharing a common core with said third inductance and having a substantially equal value to said third inductance; and

a first capacitance coupling said first lead of said second inductance to a ground potential, and a second capacitance coupling said second lead of said second inductance to the ground potential for substantially attenuating the common mode signals without significantly attenuating the differential mode signals, wherein the common mode signals are one-half the sum of the voltage between the first conductor of the unbalanced line and the ground potential and the voltage between the second conductor of the unbalanced line and the ground potential and wherein the differential mode signals are the difference between the voltage from the first conductor of the unbalanced line to the ground potential and the voltage from the second conductor of the unbalanced line to the ground potential,

said first and second capacitances satisfy the equation

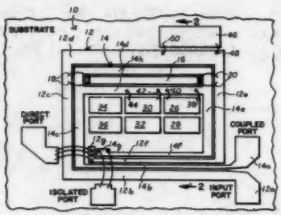
$1/(2\omega C) << \omega L_{oc}$ to substantially attenuate the common mode signals and satisfy the equation $1/(\omega C/2) >> \omega L_{sc}$ to avoid attenuating the highest frequencies of the differential mode signals used for transmission, where L_{oc} is the open circuit inductance, L_{sc} is the short circuit inductance and ω is 2π times the highest frequency of the differential mode signals used for transmission.

4,800,345

SPIRAL HYBRID COUPLER

Allen F. Podell, Palo Alto, and Robert H. Benton, Mountain View, both of Calif., assignors to Pacific Monolithics, Sunnyvale, Calif.

Filed Feb. 9, 1988, Ser. No. 154,640
Int. Cl.[4] H01P 5/18
U.S. Cl. 333—111 **25 Claims**



1. A quadrature coupler having input, direct, coupled and isolated ports comprising:

an outer strip conductor formed in a planar spiral; and

an inner strip conductor extending generally parallel, coplanarly and coextensively inside the spiral of, and spaced from said outer strip conductor, said respective conductor ends forming said four ports,

four alternating coupled regions comprising a first region and a third region in which said inner strip conductor and outer strip conductor are of known widths and are weakly coupled, a second region disposed between said first and third regions in which said inner strip conductor and outer strip conductor are in the form of an interdigital arrangement of four strongly coupled conductor sections, with adjacent sections connected to a different one of said inner and outer strip conductors, and a fourth region disposed between said third and first regions of strong coupling, wherein the beginning and ending portions of said coupled inner and outer strip conductors are adjacent each other as four generally parallel conductor ending portions with widths less than the widths of said inner and outer strip conductors in said first and third regions.

4,800,346

DELAY LINE AND ITS MANUFACTURING METHOD

Masayuki Muramatsu, Iruma, and Toshiki Morozumi, Yokohama, both of Japan, assignors to Delphi Company Ltd., Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,142
Claims priority, application Japan, May 19, 1986, 611986; Jul. 3, 1986, 611986; Aug. 26, 1986, 611986
Int. Cl.[4] H03H 7/18
U.S. Cl. 333—140 **9 Claims**

1. A lumped constant type delay line comprising:

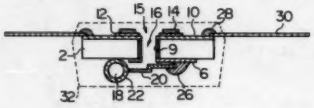
an insulating substrate having opposed surfaces, and a through-hole extending therethrough and open to said surfaces;

a laminated condenser extending over one of said opposed surfaces,

said laminated condenser comprising a first condenser electrode disposed on said one of said surfaces and around said through-hole, a dielectric layer disposed on said first condenser electrode, and a second condenser electrode disposed on said dielectric layer;

an inductor extending over the other of said opposed surfaces,

said inductor comprising an inductance electrode disposed on said other of said opposed surfaces and around said through-hole, an inductor bobbin confronting and extending parallel to said other of said opposed surfaces, electri-



cally conductive wire extending around said inductor bobbin, and a terminal pin extending from said inductor bobbin across said through-hole, said terminal pin connected to said inductance electrode; and

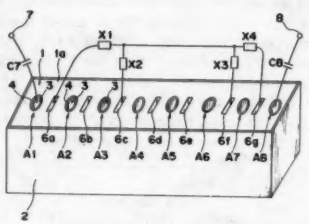
a coating of electrically conductive paste disposd on an inner peripheral wall of said substrate defining said through-hole, said coating extending from said first condenser electrode to said inductance electrode for electrically connecting said laminated condenser to said inductor.

4,800,347

DIELECTRIC FILTER

Tadahiro Yorita, and Motoharu Hiroshima, both of Kanazawa, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 3, 1987, Ser. No. 92,769
Claims priority, application Japan, Sep. 4, 1986, 61-208759; Sep. 4, 1986, 61-208760; Sep. 4, 1986, 61-208761
Int. Cl.[4] H01P 1/205, 7/04
U.S. Cl. 333—202 **8 Claims**



1. A dielectric filter comprising:

at least three dielectric resonators coupled in a cascade manner, said resonators being arranged in a unit defined by a single block made of dielectric material having at least three first-type through holes extending into a main face thereof, an inner conductor deposited on an inner face of each said first-type through hole, and an outer conductor deposited at least on an outer face of said block other than said main face thereof, each dielectric resonator being defined by one said inner conductor, by said dielectric material provided therearound, and by said outer conductor;

at least two coupling means, each formed between a pair of neighboring dielectric resonators wherein each said coupling means is defined by a second-typehole formed extending into said main face between a respective pair of said first-type through holes; and

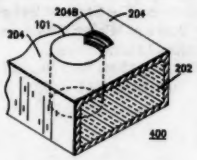
at least one bypass circuit means separate from said coupling means, having a reactance component, connected between at least two of said second-type holes.

4,800,348

ADJUSTABLE ELECTRONIC FILTER AND METHOD OF TUNING SAME

George C. Rosar, Waseca, Minn., and David G. Clifford, Jr., Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1987, Ser. No. 81,264
Int. Cl.[4] H01P 1/205, 7/04
U.S. Cl. 333—202 19 Claims



4. A method for tuning an electronic filter having at least two resonators, each formed from a transmission line having a short-circuited end as a base within a dielectric block and including at least two through-holes spatially disposed at a predetermined distance from one another, the dielectric block and the through-holes having a conformal conductive coating that covers essentially the entire surface thereof, except for an open area around each through-hole at an end opposite that of said base, the method comprising the steps of:

(a) removing a portion of said conductive coating near said open area, for at least one of said resonators in a preestablished tuning sequence, in order to capacitively tune each resonator to a respective predetermined phase target; and

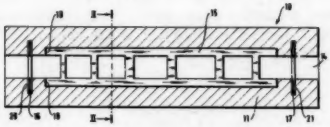
(b) removing a portion of the conductive coating near the base of at least one of said resonators.

4,800,349

E-PLANE TYPE WIDE BAND COMPOSITE FILTER

Mustafa Gurcan, Osny, and Jean-Claude Cruchon, Bouffemont, both of France, assignors to Alcatel Thomson Faisceaux, Cedex, France

Filed Sep. 17, 1987, Ser. No. 97,989
Claims priority, application France, Sep. 18, 1986, 86 13083
Int. Cl.[4] H01P 1/207, 5/02
U.S. Cl. 333—208 7 Claims



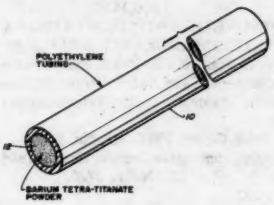
1. An E-plane type wideband composite filter comprising a conductive screening body having an elongate cavity therein with an E-plane filter structure disposed longitudinally therein, said structure being in the form of a blade having a plurality of rectangular openings cut therethrough, said body comprising two portions held against each other on either side of a separation plane along which said structure is disposed, and two irises being disposed transversely at the inlet and at the outlet of said cavity beyond the ends of said E-plane filter structure and wherein the irises are received in two transverse notches machined in the two portions of the screening body, thereby overcoming the inlet susceptances in forming said composite filter while obtaining wider inlet pass bands and retaining good transfer function characteristics.

4,800,350

DIELECTRIC WAVEGUIDE USING POWDERED MATERIAL

William B. Bridges, and William M. Bruno, both of Pasadena, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1985, Ser. No. 737,122
Int. Cl.[4] H01P 3/16
U.S. Cl. 333—239 18 Claims



1. A low-loss dielectric waveguide for replacing conventional electrical metallic waveguides and integrated circuits, comprising:

(a) a waveguide housing made from a section of flexible low dielectric constant tubing which is operable to readily be bent to conform to any of various desired electrical waveguide and integrated circuit component shapes;

(b) the interior of said section of flexible low dielectric constant tubing being entirely filled with a loose powder having low-loss and a high dielectric constant to provide a purely powdered waveguide core therein which conforms to the interior configuration of said flexible tubing;

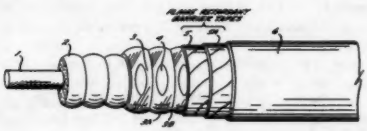
(c) a very low dielectric constant sealing means provided at opposite ends of said section of flexible low dielectric constant tubing for retaining said low-loss, high dielectric constant powder within said section of flexible low dielectric constant tubing and preventing spilling of said low-loss, high dielectric constant powder; wherein said waveguide can be bent to physically conform to the shape of various electrical waveguide and integrated circuit components as desired.

4,800,351

RADIATING COAXIAL CABLE WITH IMPROVED FLAME RETARDANCY

Sitaram Rampalli, Tinley Park, and Hugh R. Nudd, Mokena, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Sep. 10, 1987, Ser. No. 95,015
Int. Cl.[4] H01P 3/06; H01Q 13/00
U.S. Cl. 333—237 6 Claims



1. A radiating coaxial electric cable of the foam dielectric type which has improved flame retardancy, said cable comprising an inner conductor; a layer of cellular foam dielectric material surrounding the inner conductor; a single, continuous, corrugated outer conductor surrounding the dielectric foam layer in direct contact therewith, said outer conductor having apertures milled in the crests of the corrugations in said outer conductor along its length for the passage of electromagnetic radiation; at least one layer of inert, flame-retardant barrier

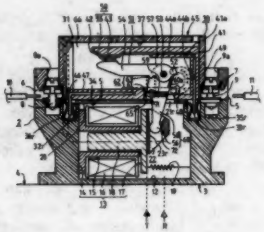
tape wrapped over the outer surface of the outer conductor so as to cover each of said radiating apertures of said outer conductor, said barrier tape comprising a particulate refractory material affixed by a heat-resistant binder to a carrier material; and a jacket of flame-retardant material extruded over the wrapped layer of tape, said tape functioning as a barrier for preventing said foam dielectric material from melting and bubbling out through said radiating apertures into penetrating contact with said extruded jacket.

4,800,352

ELECTROMAGNETIC SWITCHING APPARATUS WITH INTERCHANGEABLE SWITCHES

André Haury, Le Raincy; Elie Bebel, Epinay sur Seine; Michel Lauraire, Courbevoie, and André Vergez, Villennes sur Seine, all of France, assignors to La Telemecanique Electrique, France

Filed Oct. 8, 1987, Ser. No. 105,746
Claims priority, application France, Oct. 9, 1986, 86 14275
Int. Cl.[4] H01H 67/02
U.S. Cl. 335—132 **6 Claims**



1. An electromagnetic switching apparatus comprising:

i. an insulating base having a coupling wall provided with at least one opening and input and output socket contacts mounted in said coupling wall;

ii. actuating electromagnet means housed in said base and having an armature movable along a first direction parallel to said wall from a rest to an actuated positions and at least one coupling member attached to said armature and having an elongate receptacle substantially extending at right angles to said coupling wall;

iii. at least one insulating case having a fixation wall adapted for removably mating with said coupling wall; at least one aperture being provided in said fixation wall and registering at least partially with said opening and input and output conductor portions outwardly protruding from said fixation wall to plug-in into the respective socket contacts;

iv. switch means connected to said conductor portions and housed in said case, said switch means comprising at least one fixed contact, at least one movable contact and at least one pivotable lever holding the movable contact for effecting a displacement of the movable contact from a closed to an open condition of the switch means when the armature is in the actuated position, said displacement being effected in a second direction substantially perpendicular to said coupling wall, said holding lever pivoting about an axis substantially perpendicular to said first and second directions;

v. at least one insulating layer pivotally mounted about the axis of the holding lever and driving the latter for displacing the movable contact, said insulating lever passing through said opening and said aperture and having a coupling head which is removably engaged into said receptacle and

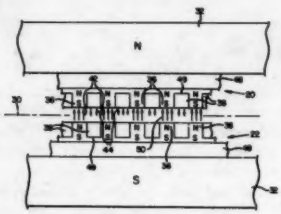
vi. locking means for preventing engagement in said head into said receptacle and disengagement of said head from said receptacle both in the closed condition of the movable contact and when the armature is in its actuated position.

4,800,353

MICROPOLE UNDULATOR

Paul L. Csonka, Eugene, Oreg., and Roman O. Tatchyn, Palo Alto, Calif., assignors to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, Eugene, Oreg.

Filed Oct. 30, 1986, Ser. No. 925,036
Int. Cl.[4] H01F 7/00
U.S. Cl. 335—210 **35 Claims**



1. An undulator for causing transverse undulations in the trajectory of a charged particle travelling along in a substantially linear trajectory, the undulator comprising:

first and second opposed jaws located on opposite sides of an undulator axis which is positionable substantially to coincide with the trajectory of moving charged particles, each jaw comprising a plurality of magnetic bars which are separated by spaces and which extend transversely to the axis, each of the bars of the first jaw having a south pole which extends toward the axis and each of the bars of the second jaw having a north pole which extends toward the axis so that a plurality of primary magnetic fields extend across the axis, each primary field extending between opposed bars of the two jaws respectively; and

a magnetic biasing means for providing a biasing magnetic field extending across the axis in a direction substantially opposite that of the primary fields, such that the strengths of the primary fields are reduced and the net effect is to provide a plurality of secondary fields extending between opposed spaces of the two jaws in a direction substantially opposite that of the primary fields.

4,800,354

SUPERCONDUCTING MAGNETIC RESONANCE MAGNET AND METHOD OF MAKING SAME

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

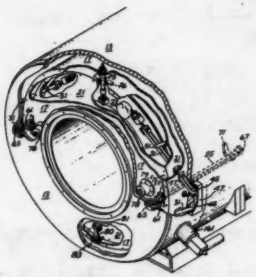
Continuation of Ser. No. 33,326, Apr. 2, 1987, abandoned. This application Sep. 16, 1987, Ser. No. 97,572
Int. Cl.[4] H01F 7/22
U.S. Cl. 335—216 **11 Claims**

1. A magnetic resonance superconductor magnet comprising:

a cylindrical coil form having a plurality of circumferential grooves;

superconductor wire wrapped under tension in each of the

circumferential grooves, the superconductor wire in each groove forming a main magnet coil; and



current conducting wire overwrapped under tension around each of said main coils, the start and finish ends of the overwrapped wire electrically shorted.

4,800,355

ELECTROMAGNET HAVING MAGNETIC SHIELD

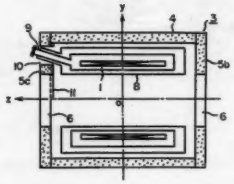
Moriaki Takechi; Tsugio Watanabe, and Shigenori Kuroda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1988, Ser. No. 193,445

Claims priority, application Japan, May 13, 1987, 62-114846

Int. Cl.[4] H01F 7/00

U.S. Cl. 335—301 **2 Claims**



1. An electromagnet comprising a magnetic field coil and a magnetic shield composed of a cylindrical yoke of ferromagnetic material and opposite end plates formed with center openings, respectively, and surrounding said magnetic field coil, one of said end plates having an asymmetrical side hole, said one end plate having a portion having a thickness larger than the other portion of said one end plate, said portion being defined within a deviation angle of not more than 90° in both directions from a straight line passing through a center of said center opening and a center of said side hole.

4,800,356

SHUNT TRANSFORMER

Herbert H. Ellis, Asheville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 127,345, Dec. 1, 1987. This application Mar. 31, 1988, Ser. No. 175,990

Int. Cl.[4] H01F 27/24, 27/30

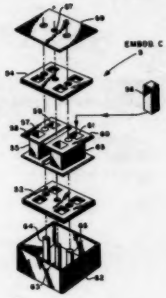
U.S. Cl. 336—184 **5 Claims**

1. A transformer having a primary winding, a secondary winding, and a magnetic circuit, said magnetic circuit comprising:

two primary coil core means placed spaced apart through said primary winding for conducting magnetic flux in the general direction of a principal axis, and both described as follows: having a plurality of laminations substantially all of which are of the same shape and size, and whose shape is substantially rectangular, and having first and second end portions;

two secondary coil core means placed spaced apart through said secondary winding for conducting magnetic flux in the general direction of a principal axis, and both described as follows: having a plurality of laminations, substantially all of which are of the same shape and size, and whose shape is substantially rectangular, and having first and second end portions;

first plate means for conducting magnetic flux between the first ends of said primary and secondary coil core means and having a plurality of laminations, substantially all of which are of the same shape and size, and having four rectangular interior boundaries defining spaced apart holes for accommodating insertion therein of said primary and secondary coil core means;



second plate means for conducting magnetic flux between the second ends of said primary and secondary coil core means and having a plurality of laminations, substantially all of which are of the same shape and size, and having four rectangular interior boundaries defining spaced apart holes for accommodating insertion therein of said primary and secondary coil core means;

said first end portions of all of said primary and secondary coil core means being inserted in mating relationship to said boundaries in said first plate mens for conduction of flux thereto;

said second end portions of all of said primary and secondary coil core means being inserted in mating relationship to said boundaries in said second plate means for conduction of flux thereto.

4,800,357

TRANSFORMER SUPPORT ASSEMBLY

Richard C. Nickels, Jr., Hampstead, and Gary S. Podboruiak, Baltimore, both of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Mar. 4, 1988, Ser. No. 164,828

Int. Cl.[4] H01F 27/26, 27/30

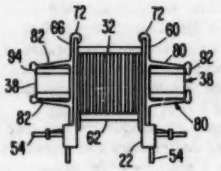
U.S. Cl. 336—198 **9 Claims**

1. A transformer support assembly for holding primary and secondary coils and a pair of U-shaped cores in operative relation, said assembly comprising:

first and second bobbins, each bobbin including a post axially extending between opposed flanges spaced for windingly receiving one of said coils around said post, each bobbin having an axial bore through said post and said flanges for receiving one leg of each held core in axially opposed relation; and

a separator including means engaging corresponding flanges

of both said bobbins for positioning said posts in generally parallel, spaced relation and means adapted to grip base



portions of held cores for biasing the legs thereof toward one another in axially opposed relation in said bores.

4,800,358

FUSE

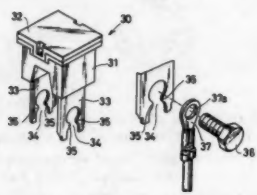
Kenji Takenouchi; Tomohiro Ikeda, and Mitsuhiko Tozuka, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Nov. 19, 1987, Ser. No. 122,694

Claims priority, application Japan, Nov. 19, 1986, 61-176590[U]; Nov. 19, 1986, 61-176589[U]

Int. Cl.[4] H01H *85/16*

U.S. Cl. 337—268 **16 Claims**



1. A fuse adapted to be connected to cable terminals with bolts, comprising:

an electrical insulating housing having a bottom portion;

a pair of fuse contacts having first and second ends, said first ends being disposed within said housing and said second ends extending out through the bottom portion of said housing, and each of said fuse contacts having a notch formed at said second end;

a fuse element disposed within said housing and electrically connected to the first ends of said fuse contacts; and

a pair of protruding portions formed at each end of said second ends and extending into a middle section of said notch such that the distance between said protruding portions is slightly smaller than the diameter of a stem portion of said bolt.

4,800,359

WINDING OF NOISE SUPPRESSING HIGH TENSION RESISTIVE ELECTRICAL WIRE

Yoshimi Yukawa, and Seiichi Wakabayashi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,699

Int. Cl.[4] H01C *3/06*

U.S. Cl. 338—214 **8 Claims**

1. A winding of noise suppressing high tension resistive electrical wire comprising:

a reinforcing fiber cord bound by immersion in a low-viscosity liquid resin binder;

an elastomeric coating layer formed on a surface of said fiber cord by application of a liquid rubber paint;

a metallic resistive wire wound around said coating layer; and

an insulating protective layer.

4,800,360

VEHICLE DISPLAY FOR CURRENT AND ALLOWABLE GEAR RATIOS

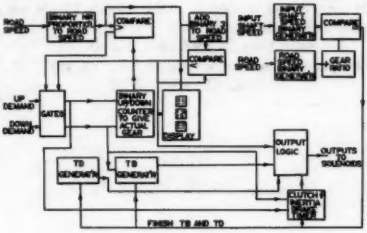
Michael W. Dunkley, Preston, and John E. Stainton, Chorley, both of Great Britain, assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 755,628, Jul. 16, 1985, Pat. No. 4,648,290. This application Aug. 22, 1986, Ser. No. 899,564

Claims priority, application United Kingdom, Jul. 23, 1984 8418749

Int. Cl.[4] B60Q *9/00*

U.S. Cl. 340—52 R **5 Claims**



1. A control display system for a change gear transmission characterized by:

a central processing unit for receiving input signals indicative of transmission input shaft and output shaft rotational speeds, for processing said input signals according to predetermined logic rules to determine the currently engaged gear ratio of said transmission and permissibly engaged gear ratios of said transmission under sensed vehicle operating conditions, and for issuing command output signals for operation of a control display, said control display comprising:

a first section displaying information indicating of the currently engaged gear ratio;

a second display section displaying information indicative of the highest permissible engagable gear ratio; and

a third display section displaying information indicative of the lowest permissible engagable gear ratio.

4,800,361

ANTI-THEFT ALARM SYSTEM FOR MOTOR VEHICLES

Jonathan D. Greif, 67 Center St., Clinton, N.J. 08809

Filed Jul. 13, 1987, Ser. No. 73,064

Int. Cl.[4] B60R *25/00*

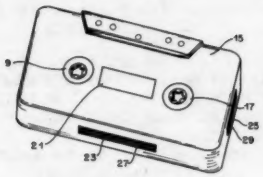
U.S. Cl. 340—63 **12 Claims**

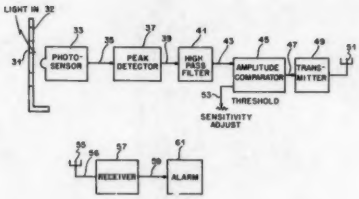
1. In a motor vehicle alarm system which includes an alarm and which is adapted to signal the alarm in response to attempted intrusion, an improvement which is adapted to respond to intrusion of light into said motor vehicle, which comprises:

(a) an enclosure for placement in the inside area of a motor vehicle having at least a frame and a faceplate, said face-

plate having at least one aperture through which intruding light may enter, said enclosure being portably located on a dashboard and having the appearance and size of a tape cassette so as to conceal it from an intruder;

(b) intruding light detecting means within said enclosure and located at said aperture;





(c) a signal generating means connected to said intruding light detecting means adapted to generate a signal in response to a preset level of intruding light; and,

(d) a signal transmitting means connected to said signal generating means for transmission of a generated signal to set off an alarm.

4,800,362

ORGANIC SOLVENT CLEANING APPARATUS

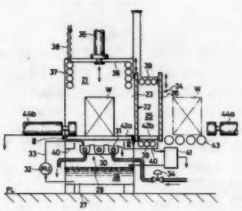
Noboru Sasaki, Toyota; Haruki Yamada, Nagoya; Yoshiaki Onchi, Kyoto, and Kazuya Horio, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 10, 1987, Ser. No. 13,137

Claims priority, application Japan, Feb. 10, 1986, 61-27714; Nov. 6, 1986, 61-264704

Int. Cl.⁴ F26B *21/06*

U.S. Cl. 340—78 **10 Claims**



1. An organic solvent cleaning apparatus comprising:

a cleaning chamber adapted to be rendered full of an organic solvent vapor to effect a cleaning operation, the cleaning chamber having

an entrance formed in a side portion thereof;

a door mounted at the entrance of the cleaning chamber operable between upper and lower positions;

means for lowering the door to immerse a portion of the door in organic solvent for hermetically sealing the cleaning chamber during a cleaning operation;

vapor supply means in the cleaning chamber for supplying the vapor only during the cleaning operation; and

vapor collecting means in the cleaning chamber for collecting the vapor subsequent to the cleaning operation.

4,800,363

METHOD FOR DATA TRANSMISSION VIA AN ELECTRIC DISTRIBUTION SYSTEM AND TRANSMISSION SYSTEM FOR CARRYING OUT THE METHOD

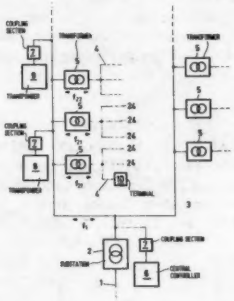
Walter Braun, Wettingen; Walter Hagmann, Dättwil; Urs Hanselmann, Zürich; Bruno Maibach, Ennetturgi, and Peter Schranz, Arlesheim, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 2, 1987, Ser. No. 134

Claims priority, application Switzerland, Jan. 15, 1986, 132/86

Int. Cl.⁴ H04M *11/04*

U.S. Cl. 340—310 A **2 Claims**



1. A method for transmitted data via an electric distribution system having a high-voltage distribution line, a medium-voltage distribution line and a low-voltage distribution line, wherein data are exchanged between a central controller and at least one terminal via the medium-voltage distribution line and the low-voltage distribution line, comprising:

transmitting data on the medium-voltage distribution line at a first carrier frequency in the range between 20 KHz and 140 KHz; and

transmitting data from the medium-voltage distribution line to the low-voltage distribution line at a second carrier frequency in the range between 4 KHz and 20 KHz;

wherein the first carrier frequency is continuously changed and is phase modulated for transmission at the medium-voltage distribution line.

4,800,364

ANALOG-TO-DIGITAL CONVERTER UTILIZING VERNIER TECHNIQUES

David W. Mortara, 8450 N. River Rd., Milwaukee, Wis. 53217

Continuation of Ser. No. 754,775, Jul. 15, 1985, abandoned. This application May 27, 1987, Ser. No. 57,686

Int. Cl.⁴ H03M *1/46*

U.S. Cl. 341—131 **21 Claims**

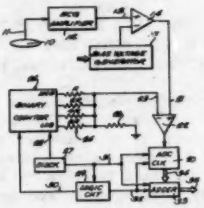
1. An analog-to-digital signal conversion system comprising:

analog-to-digital converter having an input for receiving an analog signal and an output for providing a digital representation thereof, said digital representation having a predetermined resolution;

means for generating a signal having a plurality, N, of discrete amplitude levels, the difference between the closest

in amplitude of the amplitude levels being substantially equal to (N+1)/N times the predetermined resolution of the analog-to-digital converter;

means for additively applying said N discrete amplitude level signal and an analog signal to be converted to the input of the analog-to-digital converter to provide at the



output thereof N digital representations, each corresponding to the sum of the analog signal to be converted and one of said N discrete levels; and

means for combining said N digital representations to provide a digital representation of the analog signal being converted with a greater resolution than the predetermined resolution of the analog-to-digital converter.

4,800,365

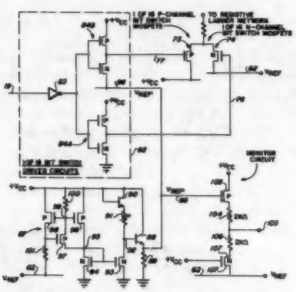
CMOS DIGITAL-TO-ANALOG CONVERTER CIRCUITRY

Robert L. White; Frederick J. Highton; Kazuo Ito, all of Tucson, Ariz., and Gary L. Miller, Santa Clara, Calif., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Jun. 15, 1987, Ser. No. 62,774

Int. Cl.[4] H03M *1/06*

U.S. Cl. 341—119 **24 Claims**



1. In a CMOS digital-to-analog converter including a resistive voltage divider ladder network, a P-channel bit switch MOSFET having its drain connected to a terminal of a ladder resistor and its source connected to a first supply voltage conductor, and its gate connected to an output of a first driver, an N-channel bit switch MOSFET having its drain connected to the terminal of the ladder resistor, its source connected to receive a first reference voltage on a first reference voltage conductor, and its gate connected to the output of a second driver, bit switch adjustment circuitry for causing the on channel resistances of the P-channel and N-channel bit switch MOSFETs to be equal, the bit switch adjustment circuitry comprising in combination:

(a) first circuit means for producing a second reference voltage on a second reference voltage conductor, the first driver including a first N-channel MOSFET having its source connected to the second reference voltage conductor and its drain connected to the output of the first driver; and

(b) second circuit means responsive to the second reference voltage for producing a predetermined level of a monitor voltage at a monitor conductor when the second reference voltage has a value that causes the first driver output voltage to turn on the P-channel bit switch MOSFET so that its on channel resistance is equal to that of the on channel resistance of the N-channel bit switch MOSFET.

4,800,366

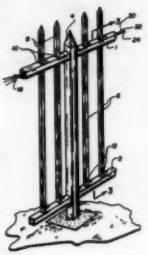
ALARM LOCATOR MODULE FOR PICKET BARRIER INTRUSION DETECTION AND LOCATION SYSTEM

Robert J. Husmann, Soquel, Calif., assignor to Omni Signal, Inc., Capitola, Calif.

Filed Aug. 4, 1987, Ser. No. 82,029

Int. Cl.[4] G08B *25/00, 13/00*

U.S. Cl. 340—524 **11 Claims**



1. An alarm locator module for use in association with a picket fence barrier having a first, second and third continuous conductor extending through a horizontal rail forming a part of the picket fence, having means for causing an open circuit in one of the conductors in the event that one of the conductors is severed and means including sensors associated with one or more of the pickets and adapted to cause a short across said first and second conductors in the event that a picket is deformed more than a predetermined amount, comprising:

signal supply means for communicating a first signal down a first end of said first conductor means;

connection detection and location means for determining when a first short has occurred across said first and second conductors and for determining the location of said first short; and

open circuit detection means for determining when an open circuit occurs on one of said conductors.

4,800,367

METHOD OF SENSING AND INDICATING ERRORS IN A DOSING CIRCUIT

Kjell Klintenstedt, Saltsjö-Boo, and Christer Lantz, Stocksund, both of Sweden, assignors to Alfa-Laval Separation AB, Tumba, Sweden

PCT No. PCT/SE86/00570, § 371 Date Jul. 23, 1987, § 102(e) Date Jul. 23, 1987, PCT Pub. No. WO87/03667, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 12, 1986, Ser. No. 79,771

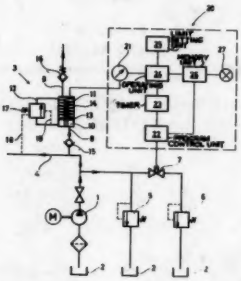
Claims priority, application Sweden, Dec. 13, 1985, 85058980

Int. Cl.[4] G01F *15/00*

U.S. Cl. 340—526 **11 Claims**

1. Method of sensing and indicating errors in a dosing circuit, in which a pumping device (1) pumps fluid via a conduit system (4) out to at least one dosing device (3) located nearby a dosing place, which measures and discharges intermittently a predetermined volume of the fluid through a pressure controlled non-return valve (16) out to the dosing place when the pressure in the conduit system (4) is increased from a low

pressure to a high pressure during a certain limited time, the dosing device (3) comprising an inlet and an outlet (8, 9, respectively) for the fluid, a charging chamber (10) connected to said inlet (8), a dosing chamber (11) connected to said outlet (9), a closable passage (12) connecting the chambers and a moveable body (13), which on one side thereof is subjected to the pressure in the charging chamber (10) and on an opposite side thereof is subjected to the pressure in the dosing chamber (11) and upon an increase of the pressure in the conduit system (4) to said high pressure moves in a way such that the volume of the dosing chamber (11) decreases and the volume of the charging chamber (10) increases, during which moment the passage (12) between the chambers (10, 11) is closed, whereby the fluid is discharged out of the dosing chamber (11) through said outlet (9) and non-return valve (16) to the dosing place and fluid flows into the charging chamber (10) from the conduit system (4), said moveable body (13) being moving in an opposite direction upon a decrease of the pressure in the conduit system (4) to said low pressure by the force of a resetting device (14), thereby pressing any fluid located in the charging chamber (10) through said passage (12) into the dosing chamber (11), and a valve (15) being arranged to prevent outflow through the inlet, characterized in that an error in the dosing circuit is sensed and indicated by:



(a) measuring the pressure in the dosing chamber (11) and channels between the same and non-return valve (16) connected thereto,

(b) measuring the time at least while the dosing is taking place, from a chosen reference time during a dosing cycle,

(c) checking that a combination of simultaneously measured values of pressure and time is kept within predetermined limits for such a combination, and

(d) emitting a signal when the combination of measured values is not kept within said limits.

4,800,368

PYROELECTRIC DETECTOR ARRANGEMENT

George R. Wisner, Deep River, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Sep. 1, 1987, Ser. No. 91,796
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—567 9 Claims

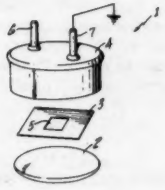
1. An arrangement for detecting the passage of living beings at least into a surveillance region, comprising

optical means for concentrating thermal radiation energy from the surveillance region into a detection zone;

pyroelectric detector means having at least one active area situated at said detection zone and operative for converting the thermal radiation energy received thereby into an electrical signal;

means for evaluating said electrical signal of said detector means to provide an indication of at least the entry of a living being from the outside into the surveillance region based on change in the total amount of the thermal radiation energy received by said active area from the surveillance region as reflected in said electrical signal; and

means for controlling the timing of the electrical signal caused by entry of a living being into a selected portion of the surveillance region relative to those caused by entry of a living being into the remainder of the surveillance region, including masking means for preventing thermal radiation from the outside of the surveillance region from reaching said active area of said detector means, said



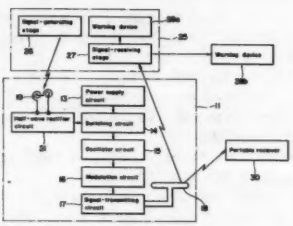
masking means including a marginal portion which peripherally bounds an opening for the passage of the thermal radiation energy from the surveillance region to said detection zone and includes at least one serration at said opening for controlling the timing of the electrical signal caused by entry of a living being into a portion of the surveillance region corresponding to said serration relative to those caused by entry of a living being into the remainder of the surveillance region.

4,800,369

ANTI-SHOPLIFTING SYSTEM

Toyoji Gomi, No. 29-2, 2-chome, Sasazuka, Shibuya-ku, Tokyo, and Kozo Yamada, No. 18-32, 2-chome, Tokumaru, Itabashi-ku, Tokyo, both of Japan

Filed Oct. 15, 1986, Ser. No. 918,919
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—572 4 Claims



1. An anti-shoplifting system for identifying unauthorized removal of individual goods sold in shops by generating a theft-detection alarm and being capable of identifying the shoplifter, said system comprising:

a detector means mounted in the vicinity of each entrance and exit of the shop, said detector means having a signal-generating stage for generating a radiowave having a predetermined range, a signal-receiving stage for receiving a specific frequency, and a warning device for providing a warning signal upon receipt of said specific frequency;

a signal generator unit, being attached to individual goods sold in the shop, for generating said specific frequency when said signal generator unit is within said predetermined range of said detector means, said signal generator unit including

a parallel wound coil, being a conductive wire wound at

least once to form several interconnected coils to obtain a parallel array of coils, said parallel wound coil for receiving said generated radiowave from said signal-generating stage and for producing a magnetic field current;

a switching circuit receiving said magnetic field current and for producing an "energized" signal;

a flat miniature power pack receiving said "energized" signal and upon receipt of said "energized" signal being maintained in a switched-on condition for supplying power to said signal generator unit;

an oscillation-modulation circuit for generating a radiowave of said specific frequency; and

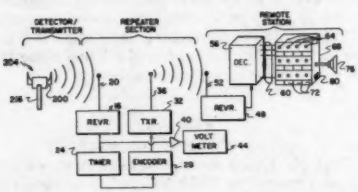
a signal-transmitting circuit for transmitting said generated radiowave from said oscillation-modulation circuit.

4,800,370

WETNESS DETECTION SYSTEM

Ivan Vetecnik, Salt Lake City, Utah, assignor to I E Sensors, Inc., Salt Lake City, Utah

Filed Oct. 7, 1985, Ser. No. 784,936
Int. Cl.[4] G08B *23/00*
U.S. Cl. 340—573 **14 Claims**



1. A system for detecting and signalling the presence of urine in a diaper or similar article of clothing comprising

detector/transmitter means attachable to the diaper for producing and transmitting a signal when no urine or other conductive matter is present in the diaper,

receiver means for receiving the signal transmitted remotely by the detector/transmitter means for producing a received signal in response thereto,

timer means for producing a time-out signal if no received signal is produced for a predetermined period of time,

repeater means responsive to the time-out signal for transmitting a radio signal,

second receiver means for receiving the radio signal and for producing an indicator signal, and

indicator means for producing a visual and/or audible indication in response to production of the indicator signal.

4,800,371

FREEZE ALARM

Joseph N. Arsi, 1209 Wellington Rd., Colonial Heights, Va. 23834

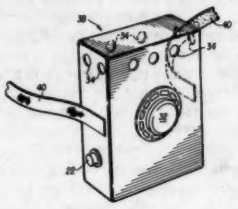
Continuation-in-part of Ser. No. 701,032, Feb. 12, 1985, abandoned. This application Aug. 26, 1986, Ser. No. 900,319
Int. Cl.[4] G08B *17/06*
U.S. Cl. 340—593 **12 Claims**

1. An apparatus to be used in attics, crawl spaces and other areas where no heat is normally present for protecting water containing pipes subjected to freezing temperatures which comprises:

a. electric circuit means including a power supply,

b. switch means in said circuit for sensing the ambient air temperature in the vicinity of a water containing pipe to be tested,

1. said switch means being preset to be activated only when the water in the pipe being tested reaches a temperature of about 4° C. to about 5° C.,



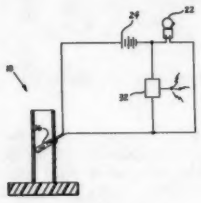
c. and alarm means responsive to said switch means to warn of the imminent freezing of said water in said tested pipe.

4,800,372

FLOOD ALARM

John H. Poteet, 303 Railroad Avenue, Bay St. Louis, Miss. 39520

Filed Nov. 17, 1986, Ser. No. 930,883
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—625 **3 Claims**



1. A float actuated alarm system, comprising:

a. float switch support means comprising a conduit vertically attached to a weighted base structure, said conduit including a through-extending axially aligned slot, said conduit further including a plurality of through-extending apertures, said slot and said apertures allowing a flow of water in and out of said conduit;

b. float switch means slidably mounted in said slot so as to permit heightwise adjustment of said float switch means, thereby to detect preselected liquid levels; and,

c. alarm means operably activated by said float switch means, said alarm means including a battery powered alarm bell.

4,800,373

LOW PRESSURE WARNING DEVICE FOR SCUBA DIVERS

Allan Mayz, 7 Academy St., Staunton, Va. 24401

Filed Aug. 25, 1987, Ser. No. 89,157
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—626 **1 Claim**

1. In combination with a scuba air tank having a regulator with a high pressure stage, and a pressure gauge suspended from said high pressure stage by a line, the improvement comprising:

first housing means attached to an upper portion of said line;

pressure switch means, in said first housing means, connected to said high pressure stage and actuated by a decrease of air pressure in said scuba air tank to a first predetermined level;

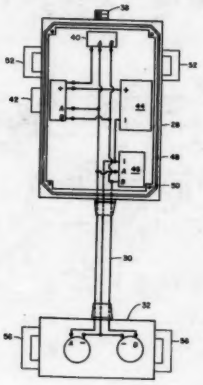
audible signal means in said first housing means actuated by said pressure switch means;

second housing means operatively connected to said first housing means and attached to a lower portion of said line adjacent said pressure gauge;

visual signal means in said second housing means actuated by said pressure switch means;

said audible signal means providing a first audible signal upon a decrease in pressure in said scuba air tank to a first predetermined pressure and a second audible signal which is different from said first audible signal in response to a further reduction in pressure in said scuba air tank to a second predetermined level;

said visual signal means comprising an amber light activated upon a decrease in pressure in said scuba air tank to said



first predetermined level and a red light activated by reduction in pressure in said scuba air tank to said second predetermined level;

battery means in said first housing means for powering said audible and visual signal means;

second switch means connected between said battery means and said pressure switch means for deactivating said audible signal means;

and

said second switch means comprising a three position switch having a first position in which said audible signal means is controlled by said pressure switch means, a second position in which said audible signal means is deactivated and a third position for testing said audible signal means.

4,800,374

PERSONNEL ANTISTATIC TEST DEVICE

Terry W. Jacobson, Chippewa Falls, Wis., assignor to Cray Research, Inc., Minneapolis, Minn.

Filed Oct. 31, 1986, Ser. No. 925,283
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—649 **1 Claim**

1. Apparatus for testing effectiveness of personnel static discharge paths through footwear and wrist straps, comprising:

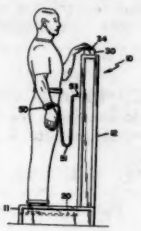
a housing including a base portion configured and positioned for standing upon by a person to be checked and a control panel portion positioned above said base portion at a convenient height to permit manual access to said control panel by a person on said base;

a terminal member positioned on said control panel and adapted for electrical connection to a wrist strap;

a first conductive member adapted for shoe contact, and means positioning it on said base portion for standing upon by a person to be checked;

a second conductive member positioned on said housing and adapted for being touched by a hand of a person being checked;

electrical resistance measurement and indication means including means mounted in said housing for connecting said first and second conductor members and said terminal member thereto, said resistance measurement and indication means operative in a first mode for measuring electrical resistance between said terminal member and said second conductive member and in a second mode for measuring electrical resistance between said first and second conductive members, and for indicating that the resistance being measured is within one of the predetermined low, medium or high resistance ranges; and



switching means operatively connected to said resistance measurement and indication means and selectively operative to cause said electrical resistance measurement in said first mode and for selecting a set of predetermined low, medium and high resistance ranges for wrist strap testing, and selectively operative to cause said electrical resistance measurement in said second mode and for selecting a second set of predetermined low, medium and high resistance ranges for checking the static discharge path through footwear;

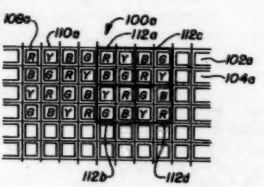
whereby said apparatus provides indications of potential hazards due to low resistance, satisfactory electrostatic discharge path, or unsatisfactory electrostatic discharge path due to high resistance, for the wrist strap and footwear of a person being checked.

4,800,375

FOUR COLOR REPETITIVE SEQUENCE MATRIX ARRAY FOR FLAT PANEL DISPLAYS

Louis D. Silverstein, Scottsdale, and Robert W. Monty, Phoenix, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1986, Ser. No. 922,659
Int. Cl.[4] G09G 3/20
U.S. Cl. 340—703 **1 Claim**



1. A color matrix array comprising:

a plurality pixels, each being one of four colors; blue, green, red, or yellow arranged to form a matrix of rows and columns wherein said columns are perpendicular to said rows;

each row in said matrix having a repetitive sequence of said

four colors, each row in a set of four rows commencing with a different one of said four colors such that a first group of two contiguous rows in said set of four rows have a first repetitive row sequence of said four colors and a second group of contiguous rows having a second repetitive row sequence of said four colors, thereby establishing repetitive sets of four rows;

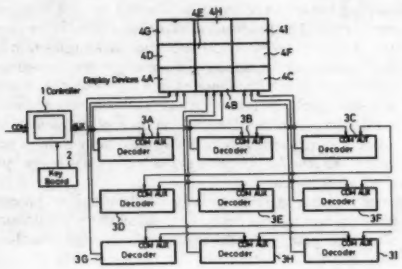
said first and second row sequences arranged such that a repetitive set of four columns is established wherein a first group of two contiguous columns have a first repetitive column sequence of said four colors and a second group of two contiguous columns have a second repetitive column sequence of said four colors, said first and second row sequences with said first and second column sequences establishing blocks of four elements in said matrix formed by two rows and two columns wherein each block contains said four colors one in each element.

4,800,376

MULTIPLE DISPLAY SYSTEM

Ryoichi Suga; Yutaka Nakagawa, and Yoshimi Watanabe, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1986, Ser. No. 945,797
Claims priority, application Japan, Jan. 13, 1986, 61-4760
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—721 **5 Claims**



1. A multiple display system for displaying data derived internally or externally on a display formed of a plurality of display devices as a single picture screen, said multiple display system comprising:

encoder means responsive to said data for generating a coded data signal;

a plurality of decoding means connected to said encoder means and arranged in a series from a first decoding means to a last decoding means; and

a plurality of display devices respectively corresponding to said decoding means and arranged in an array forming a single picture screen, said display devices being connected respectively to corresponding ones of said plurality of decoding means for displaying respective video signals fed thereto;

wherein:

said encoder means comprises means for inserting an identification number in a predetermined portion of said coded data signal and for transmitting said coded data signal to the first decoding means in said series;

each decoding means except the last in said series comprises means for transmitting said coded a data signal to the next decoding means in said series;

each of said decoding means comprises means for adopting the identification number transmitted to it in said coded data signal as its own;

each decoding means except the last in said series comprises means for deriving a new identification number from the identification number transmitted to it and for substituting said new identification number into said coded data signal for transmission to the next decoding means in said series; and

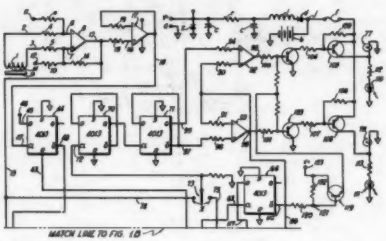
said plurality of decoding means respectively comprise means for extracting data with corresponding identification numbers from said data sequence supplied thereto, for converting the extracted data into decoded video signals, and for supplying said display devices with said decoded video signals.

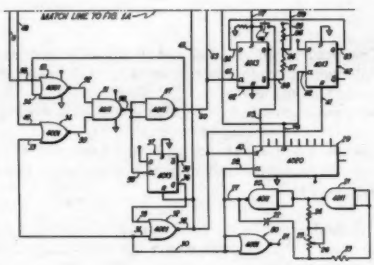
4,800,377

SPEED REDUCING SIGNAL

Charles E. Slade, 103 E. Walker St., Augusta, Ga. 30901

Filed May 20, 1987, Ser. No. 52,534
Int. Cl.[4] B60Q 1/26
U.S. Cl. 340—72 **6 Claims**





1. A speed reduction signaling apparatus for use in an automotive vehicle having an electrical power system and a rotatable mechanical system comprising:

a speed responsive pickup system cooperative with a plurality of permanent magnets mounted on said rotatable mechanical system and which emits pulses at a rate responsive to said vehicle's speed;

a timing circuit means for independently providing clock timing pulses at a predetermined rate and establishing speed threshold;

logic circuitry means cooperative with said speed responsive pickup system and said timing circuit means for determining when said vehicle's speed has fallen below said speed threshold;

a plurality of external lamp means cooperative with said logic circuitry means and which are caused to alternately flash on and off by said logic circuitry means whenever the rate of said pulses which are emitted by said speed responsive pickup system falls below said speed threshold; and

electrical connections for receiving electrical energy for said speed responsive pickup system, said timing circuit means, said logic circuitry means, and said external lamp means

and adapted for connection to said electrical power system.

4,800,378

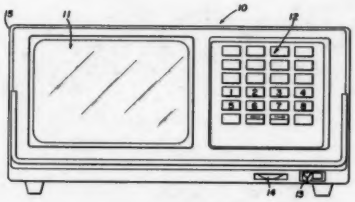
DIGITAL ENGINE ANALYZER

Michael C. Putrow; Leonard J. Wisneski, Jr., both of Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill.; Gary D. Jonker, Kenosha, Wis.; Gordon Lindhard, Racine, Wis.; Dennis W. Weidenbenner, Union Grove, Wis., and Robert O. Quinn, Wheeling, Ill., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Aug. 23, 1985, Ser. No. 769,150

Int. Cl.[4] G09G 1/14

U.S. Cl. 340—722 **8 Claims**



1. An engine analyzer for analyzing an internal combustion engine that produces analog signals, said engine analyzer comprising an analog to digital converter for converting the analog signals into digital signals at a variable sampling rate, memory means including first and second memory banks for storing the digital signals, memory write means coupled to said memory means for writing the digital signals into said memory means at a variable writing rate which corresponds to the rate at which the digital signals are being produced, memory readout means coupled to said memory means for reading the digital signals from said memory means, control means for controlling said memory banks, said memory write means and said memory readout means to enable digital signals to be written into said first memory bank while digital signals are read from said second memory bank and to enable digital signals to be read from said first memory bank while digital signals are written into said second memory bank, a cathode ray tube including a screen and an electron beam which is swept across said screen, said control means being coupled to the engine to receive information on the speed of the engine to cause the sampling rate and the writing rate to be dependent on the engine speed and to vary the rates automatically in correspondence with changes in engine speed, and said control means controlling the readout rate to correspond with the rate at which the beam is swept across the screen, the rate at which digital signals are read out of said memory means being many times greater than the rate at which digital signals are written into said memory means, said screen being defined of a plurality of rows and a plurality of columns, the electron beam being selectively operable to illuminate selected points at the intersections of the rows and the columns, each digital signal identifying the row location of a selected point in a different one of the columns (R-CC), the electron beam scanning said screen along a row in one row after the next, row monitoring means for monitoring the row in which the electron beam is sweeping at an instant of time (R-S), latching means having a clock input coupled to a source of clock signals and a signal input coupled to said memory means for receiving the R-CC information on a row containing a data point in a given column and latching it until R-CC information for the next column is read out so as to provide information on the row containing a data point in the immediately preceding column (R-PC), and circuit means coupled to said row monitoring means and to said memory means and to said latching means and being responsive to R-S and R-CC and R-PC information to provide a screen energizing signal at each intersection corresponding to the location of a digital signal and to each intersection in a column below a digital signal intersection in such column and above a digital signal intersection in the immediately preceding column and to each intersection in a column above a digital signal intersection in such column and below a digital signal intersection in an immediately preceding column, thereby giving continuity to the waveform displayed on said screen.

4,800,379

IMAGE DISPLAY WITH MOVABLE MAGNIFICATION

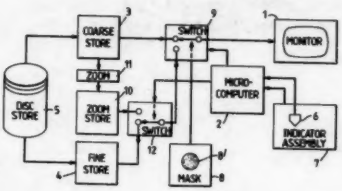
Andrew J. V. Yeomans, Hertfordshire, England, assignor to Crosfield Electronics Limited, London, England

Filed Apr. 30, 1987, Ser. No. 44,264

Claims priority, application United Kingdom, May 12, 1986, 8611554

Int. Cl.[4] G09G 1/16

U.S. Cl. 340—731 **7 Claims**



1. A method of displaying an image on a monitor, said image being defined by digital data representing the colour content of pixels of said image, said method comprising:

(1) causing said monitor to display said image under the control of said digital data;

(2) moving an image area selecting outline through ones of a plurality of positions on said displayed image, the size of said outline being smaller than said displayed image;

(3) determining, for each position of said outline, subsidiary digital data defining a portion of said image within said outline after magnification and corresponding to said position; and

(4) causing said monitor to display said magnified portion within said outline, pixels of the originally displayed image within the remaining portion of said outline being suppressed, such that said magnified portion substantially fills said outline, while the remainder of said image outside said outline is displayed unchanged.

4,800,380

MULTI-PLANE PAGE MODE VIDEO MEMORY CONTROLLER

Richard W. Lowenthal, Los Gatos; Larke E. Reeber, Fremont; Drew S. Hoffman, Campbell, and Michael Ramsay, Los Altos, all of Calif., assignors to Convergent Technologies, San Jose, Calif.

Filed Dec. 21, 1982, Ser. No. 452,000

Int. Cl.[4] G09G 1/16

U.S. Cl. 340—750 **21 Claims**

1. A page mode memory controller for accessing a dynamic random access memory (RAM), comprising:

means for accessing a selected memory row address;

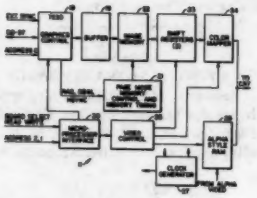
means for latching said selected memory row address during a memory access interval;

means for providing a selected most significant (MS) memory column address portion;

means for providing a selected least significant (LS) memory column address portion;

means for combining said MS and said LS memory column address portions and for periodically accessing a corresponding memory column address during said memory access interval; and

a counter for sequentially incrementing said LS memory column address portion, in coordination with said periodic memory column address access, wherein a plurality



of memory column addresses are accessed during said memory access interval, locating a plurality of corresponding sequential memory pages.

4,800,381

ELECTROMAGNETIC INDICATOR DEVICE

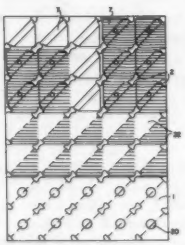
Johannes Joseph, Tulbeckstrasse 27, München 2; Maximilian Bleicher, Leonburgstrasse 11, München 90, both of Fed. Rep. of Germany (8000), and Walter Greiner, Tannenweg 8, Straubing, Fed. Rep. of Germany (8440)

PCT No. PCT/DE86/00018, § 371 Date Nov. 17, 1986, § 102(e) Date Nov. 17, 1986, PCT Pub. No. WO86/04440, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 21, 1986, Ser. No. 916,680

Int. Cl.[4] G09G *3/34*

U.S. Cl. 340—764 **17 Claims**



1. An electromagnetic indicator device having a plurality of pivotable, triangle shaped vanes which are asymmetrical in relation to the axis of rotation, said vanes arranged on a plate in the form of a matrix, each vane having a polarization magnet attached in the vicinity of said axis of rotation and pivot pins at the ends of the axis of rotation, an electromagnet for each vane fixed behind said plate for pivotably moving the associated vane from a first position to a second position on said plate, the upper side of said plate being provided with a network of bearing brackets aligned with the outer edges of said plate such that a set of four of said bearing brackets form the corner points of a square and diagonally opposite bearing brackets in a square provide the support for the pivot pins of one of said vanes, the axis of rotation of said vanes being the hypotenuse of the triangular form of said vanes.

4,800,382

DRIVING METHOD FOR LIQUID CRYSTAL DEVICE

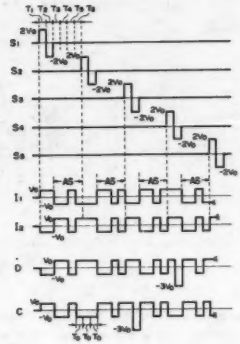
Shinjiro Okada, Kawasaki, and Junichiro Kanbe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,239

Claims priority, application Japan, Dec. 28, 1984, 59-276491

Int. Cl.[4] G09G *3/36*

U.S. Cl. 340—784 **42 Claims**



1. A liquid crystal apparatus, comprising:

a ferroelectric liquid crystal device having:

a group of scanning electrodes;

a group of signal electrodes disposed to intersect the scanning electrodes; and

a ferroelectric liquid crystal having a first and a second threshold voltage of one and another polarity, respectively, disposed between the scanning electrodes and the signal electrodes so as to form a picture element at each intersection; and

voltage signal application means for:

(a) applying to a selected scanning electrode a scanning selection signal comprising;

a voltage of one polarity or another polarity with respect to the voltage level of a non-selected scanning electrode; and

a same level voltage which is at the same voltage level as that of the non-selected scanning electrode;

(b) applying to a selected electrode an information signal comprising:

a first voltage signal providing a voltage exceeding the first or second threshold voltage in synchronism with said voltage of one polarity or another polarity; and

an alternating voltage signal commencing with a voltage of a polarity opposite to that of the first voltage signal with respect to the voltage level of the non-selected scanning electrode in the application period of said same level voltage; and

(c) applying to another signal electrode an information signal comprising:

a second voltage signal providing a voltage not exceeding the first or second threshold voltage of the ferroelectric liquid crystal in synchronism with said voltage of one polarity or the another polarity; and

an alternating voltage signal commencing with a voltage of a polarity opposite to that of the second voltage signal with respect to the voltage level of the non-selected scanning electrode in the application period of said same level voltage.

4,800,383

DATA PROCESSING ARRAYS AND A METHOD OF PRODUCING THEM

William H. Considine, Sussex, England, assignor to Stonefield Systems Plc., West Sussex, England

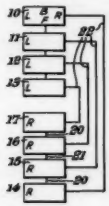
PCT No. PCT/GB85/00029, § 371 Date Nov. 13, 1985, § 102(e) Date Nov. 13, 1985, PCT Pub. No. WO85/03403, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 21, 1985, Ser. No. 781,121

Claims priority, application United Kingdom, Jan. 21, 1984, 8401628

Int. Cl.[4] H05K *3/36*; G06F *1/00*

U.S. Cl. 340—825.79 13 Claims



1. A method of producing a data processor array, said method including the steps of forming a plurality of sub-array boards each carrying a plurality of data processors arranged so that each sub-array board comprises a respective sub-array of a larger two-dimensional matrix array of said data processors, forming a stack with said sub-array boards as if each respective sub-array were divided from each adjacent respective sub-array by an imaginery fold line, said sub-array boards being arranged in an order in the stack as if the array were folded along said imaginary fold lines between the sub-arrays, and providing interconnections between the sub-array boards corresponding to interconnections extending across the imaginary fold lines between the sub-arrays in order that none of the interconnections crosses with any other said interconnection.

4,800,384

ARRANGEMENT FOR IDENTIFYING PERIPHERAL APPARATUS SUCH AS WORK STATIONS PRINTERS AND SUCH LIKE, WHICH CAN OPTIONALLY BE CONNECTED IN GEOGRAPHICALLY DIFFERENT LOCATIONS TO A COMMUNICATION NETWORK BY MEANS OF LOCAL COUPLING UNITS

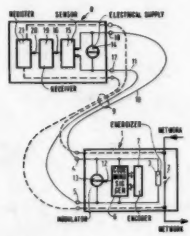
Wilfred A. M. Snijders, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1986, Ser. No. 866,647

Claims priority, application Netherlands, Jun. 6, 1985, 8501632

Int. Cl.[4] H04Q *9/00*

U.S. Cl. 340—825.520 11 Claims



1. A modular coupling unit serving as an interface between a communication network and a peripheral apparatus connectable thereto, comprising:

(a) at least two input/output voltage terminals;

(b) a code word signal generator coupled to said voltage terminals including means for triggering a generating operation in response to an external triggering signal applied to said voltage terminals, wherein said means for triggering a generating operation are arranged for deriving an operating supply voltage;

(c) a settable coding portion arranged for having said code word signal generator generate an optionally adjusted code word signal; and

(d) a modulator arranged for modulating on said supply voltage said code word signal generated by said code word signal generator and for supplying a modulated voltage to said input/output terminals.

4,800,385

WELL DATA TRANSMISSION SYSTEM USING A MAGNETIC DRILL STRING FOR TRANSMITTING DATA AS A MAGNETIC FLUX SIGNAL

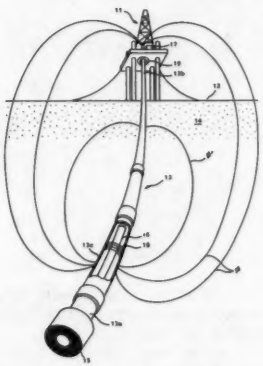
Nobuyoshi Yamazaki, Tokyo, Japan, assignor to Radic Co., Ltd. and Sakata Denki Co., Ltd., both of Tokyo, Japan

Filed Dec. 23, 1987, Ser. No. 137,190

Claims priority, application Japan, Dec. 24, 1986, 61-306253

Int. Cl.[4] H04B *13/02*

U.S. Cl. 340—854 8 Claims



1. A well data transmitting system for use in transmission of a data signal representative of drilling parameters sensed at a bottom of a well to the earth's surface, said system comprising a downhole unit disposed at the wall bottom for sensing the drilling parameters and a surface station disposed on the earth's surface, which comprises:

a tubular drill string disposed in the well formed by the drill string and being made of magnetic permeable material, said drill string having an upper portion exposed above the earth's surface and a bottom end portion;

said downhole unit being disposed in said bottom end portion of said drill string and said downhole unit comprising;

oscillating means for oscillating an electric carrier wave signal of a predetermined frequency;

means for producing data signal corresponding to at least one drilling parameter;

modulating means for modulating said electric carrier wave signal by said data signal to produce a modulated electric signal;

a transmitting coil in the form of a solenoid wound on said bottom end portion of said drill string and coupled to said modulating means, said modulated signal flowing through said transmitting coil to thereby induce a magnetic flux

signal flowing through said magnetic permeable material of said drill string; and

a power source for supplying electric power to said oscillating means, and said modulating means;

said surface station comprising:

a receiving coil in the form of a solenoid disposed around said upper portion of the drill string, a received electric signal being induced in said receiving coil by said magnetic flux signal flowing through said magnetic permeable material of said drill string, said received electric signal being equivalent to said modulated signal; and

detecting means coupled with said receiving coil for detecting said data signal from said received electric signal.

4,800,386

METHOD OF AND APPARATUS FOR COUNTING OBJECTS

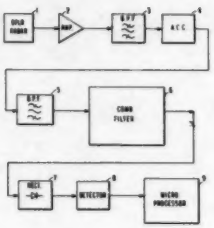
Hannu Kulju, Hyvinkää , and Alpo O. Värri, Tampere, both of Finland, assignors to Kone Elevator GmbH, Baar, Switzerland

Filed May 26, 1987, Ser. No. 53,866

Claims priority, application Finland, May 30, 1986, 862325

Int. Cl.[4] G10S *13/86*

U.S. Cl. 342—61 **10 Claims**



1. A method of counting objects present within a predetermined area by detecting acceleration and deceleration of said objects, comprising the steps of:

utilizing at least one Doppler radar to sense movements of said objects by monitoring Doppler frequencies of signals reflected from said objects;

amplifying the Doppler signal reflected from each of said objects to provide an amplified signal;

effecting an automatic gain control of said amplified signal to provide a signal of substantially constant strength independent of a distance and a size of the respective object;

detecting a frequency variation of said constant strength signal as an indication of change in a speed of movement of a respective one of said objects;

determining whether said constant strength signal represents an acceleration or represents a deceleration of the respective object;

correcting the automatic gain control of said amplified signal, at least in respect of interference signals occurring immediately above a frequency range under examination, by filtering and detecting said constant strength signal in a frequency band above said frequency range under examination and correcting said constant strength signal in said range under examination according to said filtered and detected constant strength signal; and

correspondingly modifying a count representing a number of said objects in said predetermined area according to said determined acceleration and deceleration.

4,800,387

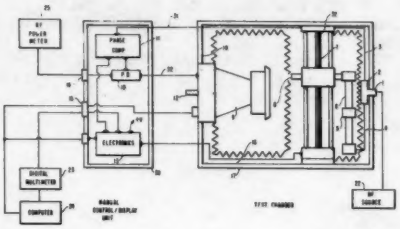
BORESIGHT CHAMBER ASSEMBLY APPARATUS

Edward B. Joy, Stone Mountain, Ga., assignor to Logimetrics, Inc., Plainview, N.Y.

Filed Feb. 7, 1984, Ser. No. 577,788

Int. Cl.[4] G01S *7/40*

U.S. Cl. 342—165 **17 Claims**



1. A boresight chamber assembly apparatus for measuring the boresight characteristics of an antenna, comprising:

a rectangular housing having an aperture of a given diameter located on a sidewall and adapted to accommodate an antenna to be tested,

an antenna structure having a base secured to a plate said plate being of a larger diameter than said aperture to enable said antenna to be positioned into the hollow of said housing when said plate is inserted over said aperture,

a moveable RF near field probe located in the hollow of said housing and adapted to move parallel to the radiating surface of said antenna, said probe being a linearly polarized low gain open ended waveguide antenna positioned at a given distance from said antenna radiating surface,

a source of RF energy coupled to said probe for enabling said probe to emit RF radiation with said RF source generating a given wavelength where said given distance of said probe is at three wavelengths of said RF wavelength, and

means coupled to said probe to move the same to a plurality of separate positions each parallel to said radiating surface of said antenna, and

processing means coupled to said antenna and said RF source for providing outputs indicative of any phase differences between the same with a separate output for each of said separate positions whereby the boresight error of said antenna can be derived from said outputs.

4,800,388

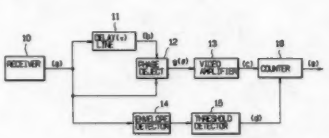
APPARATUS FOR MEASURING PULSE COMPRESSION RATIO

Kozo Okada, Kanagawa, Japan, assignor to Tokyo Keiki Company, Ltd., Tokyo, Japan

Filed Feb. 6, 1985, Ser. No. 699,154

Int. Cl.[4] G01S *13/28*

U.S. Cl. 342—194 **4 Claims**



1. An apparatus for measuring a pulse compression ratio comprising:

an unknown radar signal receiving means for receiving radar signals transmitted from at least one unspecified unknown pulse compression radar; and

a pulse compression ratio detecting means for detecting a number (J) of phase inversions existing in one pulse of an unknown bi-phase modulated signal whose modulation code sequence is unknown from among the signals received by said unknown radar signal receiving means or for detecting a function of said number of phase inversions;

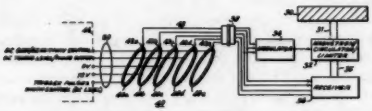
wherein a value detected by said pulse compression ratio detecting means is set to a pulse compression ratio (PCR) of said unknown bi-phase modulation code or to an approximate value of said pulse compression ratio.

4,800,389

RADAR APPARATUS

Philip R. Reger, Newtown Square, and Bob M. Dobbins, Villanova, both of Pa., assignors to Mars Electronics, West Chester, Pa.

Filed Dec. 5, 1986, Ser. No. 938,506
Int. Cl.[4] G01S 13/00
U.S. Cl. 342—175 **11 Claims**



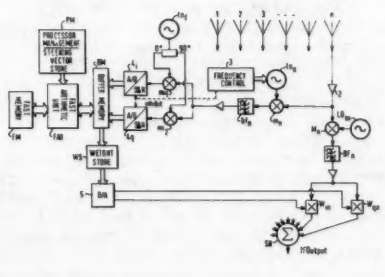
1. A radar apparatus comprising: transmit means for generating radar signals to be transmitted; receive means for receiving reflected radar signals; an antenna coupled to said transmit and receive means; a rotatable antenna structure to which said antenna is secured; and a common housing formed of microwave shielding material and secured to said rotatable antenna structure and in which said transmit and receive means are housed; said transmit means and said receive means including a unitary magnetron, microwave circulator and microwave limiter device.

4,800,390

ADAPTIVE ANTENNA ARRAYS FOR FREQUENCY HOPPED SYSTEMS

Jeffrey G. Searle, Galmpton, Great Britain, assignor to STC PLC, London, England

Filed Jul. 28, 1987, Ser. No. 78,590
Int. Cl.[4] G01S 3/16, 3/28
U.S. Cl. 342—383 **5 Claims**



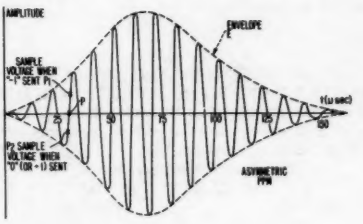
1. An adaptive antenna array arrangement for a frequency hopped spread spectrum system receiver, the arrangement including a frequency hopped auxiliary local oscillator and control thereof designed to hop sequentially and pseudo-randomly into frequency bands across the spread spectrum of the system independently of the main receiver frequency hopped local oscillator which is hopped into the same bands on a different pseudo-random basis, individual mixing means for mixing output of the auxiliary local oscillator with the signal received from each of the antenna array elements, means for deriving from each mixing means weight values for each hopped frequency, means for storing the weight value so derived and means for applying the weight values to the relevant array element outputs when the main local oscillator is hopped into the different frequency bands, the weight value being such that the adaptive arrays form nulls in the reception pattern which are directed towards unwanted signal sources.

4,800,391

METHOD OF AND APPARATUS FOR MESSAGE COMMUNICATION ON LORAN-C NAVIGATIONAL SIGNAL BROADCASTS AND THE LIKE WITH REDUCED NAVIGATION ERRORS

Per Enge, Groton, Mass., assignor to Megapulse, Inc., Bedford, Mass.

Filed Nov. 3, 1987, Ser. No. 116,461
Int. Cl.[4] G01S 1/24; H03K 7/04
U.S. Cl. 342—389 **10 Claims**



1. A method of pulse position modulating successive Loran-C pulses while obviating errors caused by such modulation in the sampling reception determination of a predetermined zero crossing of a captive cycle monitored for navigation position determination, said method comprising pulse-position modulating said pulses from the normal unmodulated pulse timing positions asymmetrically for pulse position advance and delay, and adjusting the degree of asymmetry to compensate for the difference in amplitudes of the negative and positive portions of said cycle at equal reception sampling times on each side of the said zero crossing.

4,800,392

INTEGRAL LAMINAR ANTENNA AND RADIO HOUSING

Oscar M. Garay, North Lauderdale; Quirino Balzano, Plantation, and Thomas J. Manning, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 8, 1987, Ser. No. 1,284
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS **1 Claim**

1. A laminar antenna, comprising in combination:

a substantially flat conductive ground plane lamina having first and second surfaces;

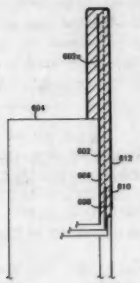
a first dielectric lamina superposed said first surface, wrapping around an end of said ground plane lamina, and superposing a portion of said second surface of said ground plane lamina;

a second dielectric lamina superposed said first dielectric lamina, and extending over said first surface of said ground plane lamina, wrapping around said end of said ground plane lamina and extending over said second surface of said ground plane lamina;

a conductive exciter lamina positioned between said first and second dielectric laminae; and

a radiator lamina superposed said second dielectric lamina

and extending over said first surface of said ground plane lamina, wrapping around said end of said ground plane



lamina and extending over a portion of said second surface of said ground plane lamina.

4,800,393

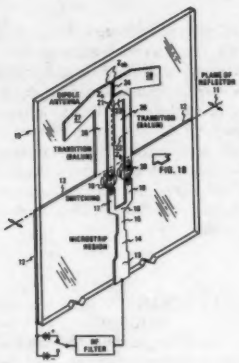
MICROSTRIP FED PRINTED DIPOLE WITH AN INTEGRAL BALUN AND 180 DEGREE PHASE SHIFT BIT

Brian J. Edward, Jamesville; Richard J. Lang, Liverpool, and Daniel E. Rees, Camillus, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 3, 1987, Ser. No. 80,955

Int. Cl.[4] H01Q *1/38, 9/16*

U.S. Cl. 343—821 **7 Claims**



1. In combination, a microstrip fed printed dipole with an integral balun and 180° phase shift bit, fabricated by patterning a first and a second metallized layer disposed respectively on the under and upper surface of a planar dielectric substrate, said combination comprising:

(1) an unbalanced first microstrip transmission line including a first strip conductor and a first ground plane, said transmission line having a branch at which a second and a third microstrip transmission line are formed, the second transmission line including a second strip conductor and a second ground plane, and the third transmission line including a third strip conductor and a third ground plane with the three said ground planes being formed from said first metallized layer and the three said strip conductors being formed from said second metallized layer,

(2) a pair of switches, the first switch connected between said second strip conductor and said second ground plane, and said second switch connected between said third strip conductor and said third ground plane, each switch being positioned at an electrical length approximately equal to one-fourth wavelength from said branch, each switch having a first state in which the strip conductor, to which it is connected, is connected to the ground plane, to which it is connected, and a second state in which the strip conductor, to which it is connected, is disconnected from the ground plane to which it is connected to respectively prevent and permit r.f. transmission in the transmission line,

(3) control means coupled to said switches to achieve a first control state in which said first switch is conductive and said second switch is non-conductive or a second control state in which said first switch is non-conductive and said second switch is conductive,

(4) a dipole radiating element formed from said first metallized layer, and

(5) a transition in which a continuation of the ground plane of said unbalanced transmission lines is bifurcated by a central slot into a first and a second ground plane, said first and second ground planes of said transition forming a balanced transmission line, and

continuations of the strip conductors of said second and third transmission lines form a three part "U" shaped strip conductor with the base of the "U" remote from said branch, said "U" shaped conductor continuing over said bifurcated ground planes to provide propagation between said three parts and said bifurcated ground planes, propagation proceeding in one consecutive order or the reverse consecutive order, depending upon which of said two control states is present,

a first of said three parts, which forms a portion of said second transmission line, being disposed between said branch and said dipole,

a second of said three parts, which forms a crossover extending across said slot over said dipole from one bifurcated ground plane to the other bifurcated ground plane, and

the third of said three parts, which forms a portion of said third transmission line, being disposed between said branch and said dipole,

said dipole radiating element being formed as a diverging extension of said first and second bifurcated ground planes, the inner portions of the arms of said dipole underlying and being strongly coupled to said second part, and the outer portions of said arms extending beyond said second part for efficient radiation.

4,800,394

ANTENNA POLAR MOUNT ASSEMBLY

Helmut F. Homann, 16354 Greenland, Mt. Clemens, Mich. 48045, and Robert J. Piper, 22494 Ray, Detroit, Mich. 48223

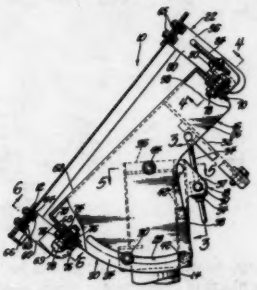
Filed Nov. 14, 1986, Ser. No. 930,535

Int. Cl.[4] H01Q *1/12, 3/04*

U.S. Cl. 343—882 **3 Claims**

1. An antenna support assembly (10) for supporting a disk-type antenna (12) on a support post (14) defining a vertical axis and having a horizontal axis perpendicular to said vertical axis, said assembly (10) including a polar adjustment means (16) to interconnect an antenna (12) and a support post (14) and having a slanted axis inclined relative to said vertical axis for adjusting and fixing the position of the antenna about said vertical axis for longitude and about said horizontal axis for latitude and angularly fore and aft relative to said slanted axis, said polar adjustment means (16) including mounting means (18) for securing said polar adjustment means (16) to the support post (14) and for adjustment about said vertical axis, housing means (20) for adjustment about said horizontal axis, and brace means (22) secured to said housing means (20) to attach the antenna (12) to said housing means (20) and to define said slanted axis along said housing means (20) and for adjustment of the antenna (12) angularly for and aft relative to said slanted axis, said housing means (20) including a housing (24) pivotally secured to said mounting means (18) and the support

post (14) at said horizontal axis and having side flanges (26) forming a U-shaped configuraiton and having a curved elongated slot (28) on at least one of said side flanges (26) and a fastening means (30) disposed within said slot (28) for adjusting and fixing the position of the housing (24) with respect to said horizontal axis, said brace means (22) including a top bracket means (56) for adjustably securing the antenna (12) to the upper portion (58) of said housing (24) along said slanted axis, and a bottom bracket means (60) for fixedly securing the antenna (12) to the lower portion 962) of said housing (24) along



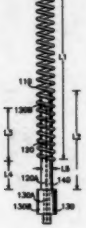
said slanted axis, said assembly characterized by said top bracket means (56) including an upper bracket (82) secured to the antenna (12) and having a U-shaped configuration, a threaded rod (84) pivotally connected between said upper bracket (82) for displacing said upper bracket (82) for and aft said slanted axis, said bottom bracket means (60) including an upper angle bracket (64) having a U-shaped configuration and a lower angle bracket (68) disposed between said upper angle bracket (64) and having a U-shaped configuration and connecting said upper angle bracket (64) to said housing (24)

4,800,395

HIGH EFFICIENCY HELICAL ANTENNA

Quirino Balzano, Plantation, and Oscar M. Garay, North Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1987, Ser. No. 64,628
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 **6 Claims**



1. An antenna comprising:

a helical element exhibiting an electrical length approximately equal to ¼ wavelength at a selected center frequency, said helical element also exhibiting a physical length, and

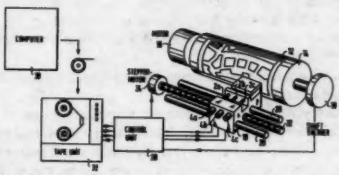
a monopole element having opposed ends, one end of which extends into said helical element a predetermined distance sufficient to cause resonant coupling between said monopole element and said helical element, said predetermined distance being substantially less than the physical length of said helical element, the remaining end of said monopole element being connectable to a source of radio frequency energy.

4,800,396

COMPENSATION METHOD AND DEVICE FOR INK DROPLET DEVIATION OF AN INK JET

Carl H. Hertz, Skolbänksvägen 8, S-22367 Lund, Sweden

Filed Jul. 8, 1987, Ser. No. 70,922
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 **17 Claims**



11. Apparatus for adjusting the direction of a jet in an ink jet printing device using at least one electrically controllable continuous ink jet, said apparatus comprising:

a. nozzle means (2) to generate a liquid jet (6) which disintegrates into a train of drops at a point of drop formation and propagates along an ink jet path;

b. control electrode means (36) to charge the drops of the jet in response to an electrical control signal;

c. means (34*a*, 34*b*) to generate an electric deflection field essentially perpendicular to the jet direction;

d. means (38) to select the drops on the basis of their charge to determine, whether a specific drop proceeds to and impinges on a predetermined location on a record receiving surface or is intercepted and prevented to proceed to said surface, characterized by

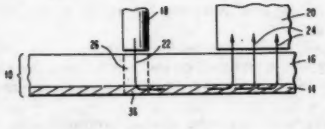
e. means (46) to apply an adjustable DC bias voltage between the jet liquid and the control electrode means (36) to adjust the jet direction in a plane parallel to the electric deflection field, said bias voltage being appreciably lower than the control signal voltage, which effects said selection.

4,800,397

METAL TRANSFER TO FORM PRINTING MASTER PLATE OR PRINTED CIRCUIT BOARD

Ali Afzali-Ardakani, White Plains; Mukesh Desai, Fishkill, both of N.Y.; Bradford J. Factor, Palto Alto, Calif.; Jan-Pieter Hoekstra, Carmel, and Keith S. Pennington, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1987, Ser. No. 115,471
Int. Cl.[4] G01D *9/00*
U.S. Cl. 346—1.1 **21 Claims**



1. A method for transferring a metal image to a softenable receiving layer, which method comprises:

locating a multi-stylus recording head capable of providing

electrical current pulses in selected ones of said recording styli in contact with a resistive layer of a metal thermal transfer medium comprising said resistive layer and thereon a thin metal layer;

applying electrical current pulses through selected ones of said recording styli to produce high density localized currents in the regions of said resistive layer in contact with said selected energized styli, said electrical currents providing resistive heating in the regions of said metal layer about coextensive with said resistive layer regions;

contacting said metal regions with said softenable receiving layer while providing sufficient heating by means of said resistive heating in the regions of said metal layer about coextensive with said receiving substrate to soften said about coextensive regions of said receiving substrate to transfer at least a portion of the thickness of said metal regions to said receiving layer.

21. An apparatus for metal transfer comprising:

a transfer medium comprised of a resistive layer and a thin metal layer thereon;

a receiving medium comprised of a heat softenable receiving surface; and

a multi-stylus recording head for providing patterns of electrical current through selected regions of said resistive layer, where said electrical currents are localized in the regions of said resistive layer contacted by the styli which are energized by said electrical currents, said localized electrical currents being sufficiently dense to provide sufficient resistive heating to regions of said metal layer about coextensive with said selected regions of said resistive layer, to soften coextensive regions of said heat softenable receiving surface when brought into contact with said metal layer.

4,800,398

INK-JET PRINTER WITH AN ENCASED PRINTER HEAD UNIT

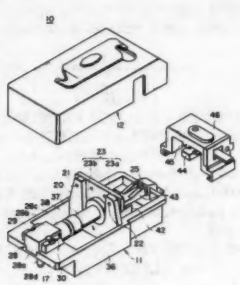
Osamu Naruse; Chuji Ishikawa, both of Yokohama; Sadao Kakeno, and Kyuhachiro Iwasaki, both of Fujisawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 120,634

Claims priority, application Japan, Nov. 14, 1986, 61-271509

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—75 **16 Claims**



1. An ink-jet head assembly for use in an ink-jet printer, comprising:

a generally bathtub-shaped bottom case;

ejecting means mounted on said bottom case for ejecting a series of charged ink droplets in a predetermined direction;

deflecting means mounted on said bottom case in front of said ejecting means for deflecting said series of charged ink droplets selectively in accordance with image information to be recorded; and

collecting means mounted on said bottom case for collecting said series of charged ink droplets which have not been deflected beyond a predetermined level.

4,800,399

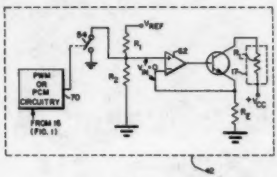
PULSED CONSTANT CURRENT SOURCE FOR CONTINUOUS TONE RESISTIVE RIBBON PRINTERS

Michael E. Long, Fairport, and David A. Johnson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1987, Ser. No. 44,622

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **5 Claims**



1. In a continuous density thermal printer including a print head having a plurality of electrodes which supply current to a resistive ribbon having a dye layer with sublimable dye which in response to different heat levels causes variable amounts of dye to transfer to a receiver, the improvement comprising:

(a) a plurality of constant current means each effective in a first condition to provide constant current to a selected electrode which supplies such current to the resistive ribbon which responds by producing heat and effective in a second condition to prevent current from being supplied to such electrode; and

(b) control means for causing each said constant current means to be effective in its first condition for a selected time to produce constant current to cause a predetermined amount of dye to transfer to produce a continuous tone dye image.

4,800,400

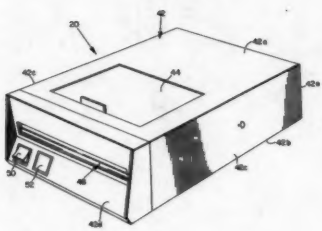
ELECTRONIC IMAGE PRINTING APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 104,770, Oct. 5, 1987, abandoned. This application Feb. 22, 1988, Ser. No. 158,585

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—107 R **17 Claims**



1. An electronic image printing apparatus for printing images on respective ones of a plurality of image recording units which are releasably retained in a cassette therefor, said apparatus comprising:

a housing assembly having means for allowing entry and removal of the cassette;

means disposed in said housing assembly for mounting the cassette for movement in at least a printing direction along a predetermined path;

means for providing at least a beam of light;

means for modulating said means for providing the light beam in response to electronic signals corresponding to an image of a subject selected for printing;

light scanning means operable for scanning the modulated light beam across a preselected scanning line of the image recording units;

optical means for directing the modulated light beam to said light scanning means and from said light scanning means to an image plane of one of the image recording units;

means operable for driving said cassette mounting means and the cassette in said printing direction as said light scanning means scans the modulated light beam across the scanning line, such that the combination of movement provided by said light scanning means and said cassette driving means results in a raster scan image of the subject on the image recording unit by the modulated light beam; and,

means disposed in said housing assembly for ejecting successive scanned recording units from the cassette and said housing assembly.

4,800,401

LIGHT SCANNING DEVICE FOR SCANNING WITH A LASLER BEAM AND AN IMAGE FORMING APPARATUS FOR FORMING AN IMAGE WITH A LASER BEAM

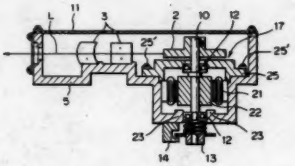
Hideki Sato, Tokyo; Teruo Komatsu, Yokohama, and Yoshinori Sugiura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1986, Ser. No. 850,829

Claims priority, application Japan, Apr. 15, 1985, 60-54763[U]

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—108 **78 Claims**



1. A light scanning device having:

light scanning means for scanning with a light beam;

said light scanning means having a light deflecting member rotated to scan with the light beam and deflecting the light beam, and bearing means for rotatable supporting said light deflecting member;

a supporting member for holding at least a part of said bearing means; and

a base member formed integrally as a one-piece construction with said supporting member;

said base member having a first containing portion for containing and positioning therein a light output unit which puts out the light beam, and a second containing portion for containing and positioning therein an imaging lens for imaging the light beam deflected by said light deflecting member, the positional relation among said first containing portion, said second containing portion and said supporting member being determined by integral one-piece construction formation, the optical path accuracy of said light beam being improved.

4,800,402

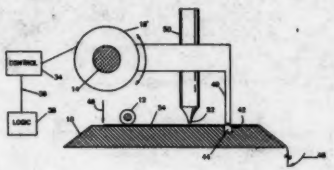
PLOTTER PAPER SIZING SYSTEM

Ralph J. Lake, Jr., Yorba Linda; Franklyn L. Wiley, Long Beach; A. Daniel Coby, Brea, and John Plath, Jr., Hacienda Heights, all of Calif., assignors to CALCOMP Inc., Anaheim, Calif.

Filed Jan. 7, 1988, Ser. No. 142,059

Int. Cl.[4] G01D *15/24, 9/00*; G06F *15/626*

U.S. Cl. 346—139 R **8 Claims**



7. In a graphics plotter system having a platen over which paper is moved longitudinally to create one axis; penholding apparatus moved transversely across the platen and the paper to create the other axis, a controlled raising and lowering mechanism connected to the penholding apparatus for lowering a pen being held therein into contact with and for raising it from contact with the paper and for providing a relative vertical position value signal, vertical sensing means carried by the penholding apparatus for sensing the top surface of the platen, and history means operably connected to the vertical sensing means and to receive the vertical position value signal from the controlled raising and lowering mechanism for calculating and saving values indicating the distance to the platen top surface at a plurality of points across the platen, the improvement for allowing automatic paper sizing comprising:

(a) edge sensing means carried by the penholding apparatus and cooperating with the vertical sensing means and the history means for sensing the edges of paper;

(b) means for automatically moving the paper from end to end over the platen and for saving the positional values of the ends of the paper as found by said edge sensing means; and,

(c) means for automatically moving the penholding apparatus from side to side over the paper and for saving the positional values of the side edges of the paper as found by said edge sensing means.

4,800,403

METHOD AND APPARATUS FOR RESTORING OPERATION OF INK JET PRINTING NOZZLES

Andrea Accattino, Romano, and Aldo Jans, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Aug. 24, 1987, Ser. No. 88,303

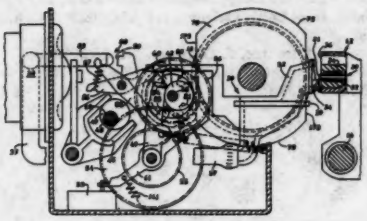
Claims priority, application Japan, Sep. 5, 1986, 67691 A/86

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R **8 Claims**

1. Apparatus for restoring the operation of at least a nozzle of an ink jet head, including a printing element carrying said nozzle, said element being permanently filled with ink and connected with an ink tank means, the apparatus comprising a suction device adapted to be selectively connected to said head to apply a predetermined depression to said head to draw ink through the nozzle, said suction device comprising a movable container for collecting the ink drawn from said nozzle and an elastic cap connected to said container and selectively covering said head, depression means for generating said depression within said container and said cap, said depression means comprising a vacuum pump connected to said cap through a drain conduit, valve means interposed in said drain conduit between said pump and said cap, and magnetic coupling means connected to said valve means and activated by said pump for selectively connecting said cap with the pump to apply said

depression to the head and for connecting said cap to the atmosphere after the pump is deenergized and before the cap is



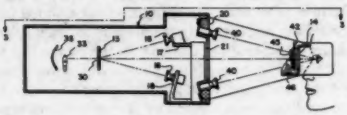
removed from said head, whereby any additional suction effect caused by said elastic cap is prevented.

4,800,404

APPARATUS AND METHOD FOR TESTING VISUAL SENSITIVITY TO GLARE

Arthur P. Ginsburg; David W. Evans, both of Dayton, and Kenneth Blauvelt, Centerville, all of Ohio, assignors to Vistech Consultants, Inc., Beavercreek, Ohio

Filed Sep. 22, 1986, Ser. No. 910,000
Int. Cl.[4] A61B *3/02, 3/00*
U.S. Cl. 351—243 **18 Claims**



1. Apparatus for measuring the visual contrast sensitivity of an individual in both the presence and absence of glare, comprising:

(a) a target having thereon alternating light and dark areas arranged for testing the visual contrast sensitivity of an individual,

(b) means for locating one eye of an individual to be tested at a predetermined viewing position relative to said target,

(c) means establishing a plurality of discrete glare source locations within the field of view of said target from said viewing position from which glare may be projected toward said viewing position, and

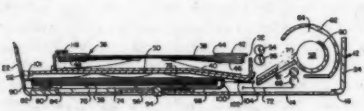
(d) selective means for producing glare at any one or more of said source locations.

4,800,405

CAMERA HAVING DISCONNECTIBLE MANUAL CONTROLS FOR FILM UNIT REMOVAL ASSEMBLY AND A SHADE ASSEMBLY

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1987, Ser. No. 137,669
Int. Cl.[4] G03B *17/52*
U.S. Cl. 354—86 **14 Claims**



1. Photographic apparatus comprising: means for supporting a film cassette containing a plurality of film units of the instant type in position for their sequential exposure;

means for defining a lighttight imbibition chamber, said means including a window through which an image in an exposed film unit may be viewed subsequent to its formation;

means for advancing a film unit, subsequent to its exposure, from the film cassette to said imbibition chamber, said advancing means including means for spreading a processing liquid across a layer of the exposed film unit so as to initiate the formation of a visible image therein;

means for defining an egress through which the exposed film units may be advanced from said imbibition chamber to the exterior of said apparatus;

means for preventing the entry of light, actinic to an exposed film unit, into said imbibition chamber via said window, said light preventing means being movable from an operable light blocking position to an inoperative position in which a film unit containing a visible image may be viewed through said window;

manually operative means for moving said light preventing means from said operative position to said inoperative position and for moving an exposed film unit from said imbibition chamber to the exterior of said camera via said egress; and

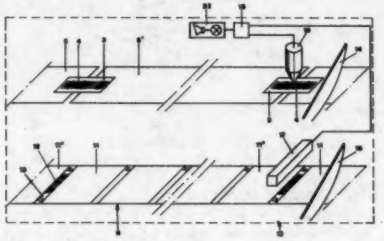
means for rendering said manually operative means ineffective to perform such functions for a predetermined period of time subsequent to the exposure and during development of a film unit in the apparatus.

4,800,406

APPARATUS FOR CREATING AND CHECKING CORRELATION BETWEEN NEGATIVES AND PRINTS IN PHOTOGRAPHIC LABORATORIES

Roberto Signoretto, Olmo Di Martellago, Italy, assignor to Photo Engineering International S.R.L., Venice, Italy

Filed Nov. 5, 1986, Ser. No. 927,170
Claims priority, application Italy, Nov. 11, 1985, 84154 A/85
Int. Cl.[4] G03B *17/24, 27/32, 27/52*
U.S. Cl. 354—105 **7 Claims**



1. In a method for creating and verifying correlation between film negatives and prints in a photographic processor having a printing station at which prints are made on print medium from the negatives, and a finishing station at which negatives and prints are inserted into an envelope, said method comprising steps of

joining adjacent pairs of filmstrips thus forming a continuous strip from the filmstrips pertaining to different orders by means of labels bearing machine-readable control numbers between adjacent film strips,

reproducing each of said numbers onto the print medium at the printing station,

checking the correspondence in the finishing station between the control number of each film and the number reproduced on the corresponding series of prints, and

producing an error signal in the event of any lack of correlation, the improvement wherein

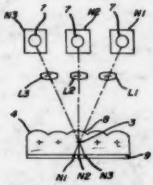
in the reproducing step, the machine-readable control numbers on the labels are transferred to the print medium photographically.

4,800,407

TOTAL FOCUS 3-D CAMERA AND 3-D IMAGE STRUCTURE

Allen K. Wah Lo, 5022 Hidden Branches Dr., Dunwoody, Ga. 30338

Filed Feb. 1, 1988, Ser. No. 150,977
Int. Cl.[4] G03B *35/08*
U.S. Cl. 354—114 **5 Claims**



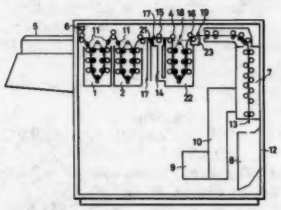
5. A three lens three-dimensional camera in which the lenses are arranged in substantially the same horizontal plane with the distance between adjacent lenses being equal and determined by the focal length of the lenses and size of the negative being utilized so that when the film is projected onto lenticular photographic material so that the image taken through the center lens of the camera is projected onto the photographic material at the center of the lenticule with the images from the other two lenses being projected on each side thereof.

4,800,408

PHOTOGRAPHIC MATERIAL DEVELOPING AND PROCESSING APPARATUS

Minoru Yamada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1987, Ser. No. 130,269
Claims priority, application Japan, Dec. 8, 1986, 61-290619
Int. Cl.[4] G03D *3/02, 3/08*
U.S. Cl. 354—322 **10 Claims**



1. An apparatus for development processing of photographic material, comprising:

a tank for developing exposed photographic material;

a tank for fixing the developing exposed photographic material;

a tank for containing solution for washing the photographic material;

a pre-washing bath provided between said fixing tank and said washing tank; and

a roller cleaning bath for washing one pair of rollers for conveying said photographic material from said washing tank to said drying means, said pair of rollers being situated with respect to said roller washing tank so that at least the one roller of said pair of rollers is washed;

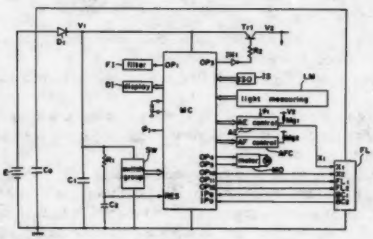
wherein flow of the washing solution is from the roller cleaning bath to said washing tank and then to said pre-washing bath, and wherein said washing solution being provided in an amount of not more than 3 liter (inclusive of 0 liter) per 1 m^2 of the photographic material.

4,800,409

CONTROL DEVICE FOR USE IN A CAMERA HAVING AN OBJECTIVE LENS

Motonobu Matsuda, Kawachinagano; Yoshihiro Tanaka, Osaka; Motohiro Nakanishi, Kobe; Nobuyuki Taniguchi, Nishinomiya, and Hiroshi Ootsuka, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1987, Ser. No. 43,616
Claims priority, application Japan, Apr. 28, 1986, 61-99233; Jul. 16, 1986, 61-167466; Jul. 16, 1986, 61-167467; Jul. 16, 1986, 61-167468; Jul. 16, 1986, 61-167470
Int. Cl.[4] G03B *3/00, 7/08, 15/02;* G02B *7/11*
U.S. Cl. 354—402 **24 Claims**



1. Control device for use in a camera having an objective lens, comprising:

means for producing a plurality of distance signals on a plurality of first regions of an object area to be photographed;

means for determining a distance on the basis of the plurality of distance signals to produce a determined distance signal for focusing the objective lens;

means for driving the objective lens in accordance with the determined distance signal;

means for measuring a plurality of brightnesses of second regions of the object area to produce a plurality of brightness signals each corresponding to the measured brightness respectively, each of the second regions being substantially similar to each of the first regions, respectively;

means for counting the number of the distance signals representing an identical distance to a distance represented by the determined distance signal;

means for discriminating whether the number counted by the counting means is single or plural;

means for determining a light measuring value on the basis of a brightness signal of a single second region corresponding to a single first region whose corresponding distance signal represents an identical distance to a distance represented by the determined distance signal when the discriminated number is single, while determining a light measuring value which corresponds to a brightness of almost the entire object area when the discriminated number is plural; and,

means for calculating exposure value of the camera in accordance with the light measuring value.

4,800,410

FOCUS DETECTING APPARATUS FOR SELECTING THE OPERATING PROCESS IN CONFORMITY WITH THE CONTRAST OF AN OBJECT

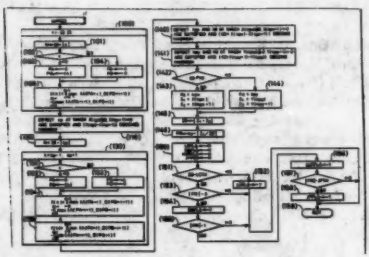
Akira Akashi; Akira Ishizaki; Yasuo Suda, all of Yokohama; Ichiro Ohnuki, Tokyo; Keiji Ohtaka, Tokyo, and Takeshi Koyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,382

Claims priority, application Japan, Jul. 10, 1986, 61-160823

Int. Cl.[4] G03B 3/00; G01J 1/20

U.S. Cl. 354—408 8 Claims



1. An apparatus for detecting the focus adjusted state of an objective optical system, comprising:

optical means for forming first and second light distributions of an object, said first and second light distributions having their relative positional relation varying in accordance with the focus adjusted state of the objective optical system;

light-receiving means for receiving said first and second light distributions and providing output signals, said light-receiving means having first and second ranges each provided with a plurality of picture elements; and

operation means for calculating a valve indicative of the focus adjusted state of said objective optical system in accordance with a plurality of different calculations using the output signals of said light-receiving means, said operation means (1) calculating a first value indicative of the focus adjusted state of said objective optical system by using one of said different calculations, (2) calculating second values indicative of the focus adjusted state of said objective optical system in said plurality of different calculations respectively by using said first value, (3) calculating evaluation values depending upon a contrast of the object determined in each of said different calculations, and (4) selecting one of said second values on the basis of said evaluation values.

6. A method of detecting the focus adjusted state of an objective optical system, comprising the steps of:

forming first and second light distributions of an object, said first and second light distrubutions having their relative positional relation varying in accordance with the focus adjusted state of the objective optical system;

receiving said first and second light distributions with a light-receiving element having first and second ranges each provided with a plurality of picture elements, and providing output signals from said light-receiving element;

calculating a preliminary value by the use of one of a plurality of different calculations, each of which calculates a value indicative of the focus adjusted state of said objective optical system by the use of the output signals obtained in said light-receiving step;

evaluating each of said different calculations using said preliminary value and selecting one of said different calculations in accordance with the evaluation; and

outputting the value calculated in the selected calculation as a value indicative of the focus adjusted state of said objective optical system.

4,800,411

MAGNETIC BRUSH DEVELOPMENT DEVICE FOR ELECTROSTATIC LATENT IMAGES

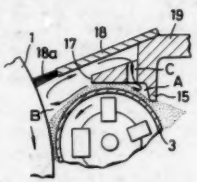
Masaru Tanaka, and Seiji Oka, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 10, 1987, Ser. No. 37,193

Claims priority, application Japan, Apr. 10, 1986, 61-54041[U]; Apr. 16, 1986, 61-56897[U]; Apr. 16, 1986, 61-87716; Apr. 18, 1986, 61-59003

Int. Cl.[4] G03G 15/08

U.S. Cl. 355—3 DD 7 Claims



1. A magnetic brush development device comprising:

(a) a development sleeve disposed closely to the peripheral surface of an electrostatic latent image carrier;

(b) a development casing housing said development sleeve and storing a two-component developer;

(c) a doctor blade disposed closely to the peripheral surface of said development sleeve for limiting the amount of the developer to be supplied to said electrostatic latent image carrier;

(d) a fiber limiting plate positioned downstream of said doctor blade in the direction of movement of the developer for limiting erected fibers of the developer;

(e) an inlet seal member extending from said development casing toward said electrostatic latent image carrier and having a distal end held against the peripheral surface of said electrostatic latent image carrier; and

(f) an air flow passage providing communication between:

(i) a first space surrounded by said doctor blade, said fiber limiting plate, and a portion of the peripheral surface of said development sleeve and

(ii) a second space surrounded by said inlet seal member, said fiber limiting plate, a portion of the peripheral surface of said development sleeve, and a portion of the peripheral surface of said electrostatic latent image carrier.

4,800,412

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Masahide Ueda, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1986, Ser. No. 841,611

Claims priority, application Japan, Mar. 22, 1985, 60-59067; Apr. 4, 1985, 60-72292

Int. Cl.[4] G03G 15/08

U.S. Cl. 355—3 DD 8 Claims

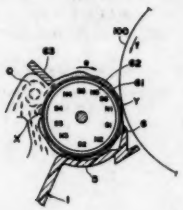
1. An electrostatic latent image developing apparatus comprising:

a developing sleeve drivingly rotatable for transporting a developer mixture in a direction along a path to an electrostatic latent image bearing surface opposite a developing side of said sleeve;

magnetic means fixedly positioned in said developing sleeve and having a plurality of N and S poles;

means for mixing and agitating a fresh supply of developer

with said developer mixture, said means for mixing and agitating including at least two auxiliary poles having a common polarity and being provided adjacent one another at a side of the sleeve facing away from an associated latent image, one pole of said plurality of N and S poles which is of a polarity opposite to the polarity of the auxiliary poles being located adjacent one of the auxiliary poles at a position downstream thereof in the rotating direction of the developing sleeve; and



a bristle height restricting plate positioned between said one pole and the auxiliary pole which is adjacent the one pole, an attractive magnetic force being exerted on the developer mixture downstream of the auxiliary poles and upstream of the bristle height restricting plate to capture the developer mixture and attract the mixture to the developing sleeve at a position adjacent the bristle height restricting plate.

4,800,413

READER PRINTER

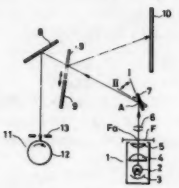
Masahiko Ito, Yokohama; Masami Maetani, Ohmiya; Shinji Murata, and Kazuhiko Onuki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1987, Ser. No. 79,539

Claims priority, application Japan, Aug. 8, 1986, 61-186593; Aug. 14, 1986, 61-190986

Int. Cl.[4] G03B *13/28*

U.S. Cl. 355—45 **11 Claims**



1. A reader printer comprising:

a focusing lens for focusing light rays passing therethrough:

first optical means for directing light rays passing through said focusing lens to a movable recording medium, said first optical means including a rotatable first mirror;

drive means for rotating said first mirror from a first angled state to a second angled state at a constant speed during movement of the recording medium;

second optical means for directing light rays reflected from said first mirror toward a screen, said second optical means including a second mirror movable between an inserted position wherein it is inserted in a reflection optical path formed by reflection from said first mirror and a retracted position wherein it is retracted from the reflection optical path; and

means for moving said second mirror in a direction substantially parallel to its reflection surface.

4,800,414

MAGNIFICATION VARYING DEVICE FOR ELECTRO-PHOTOGRAPHIC COPYING MACHINE

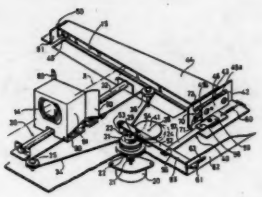
Katsuhiko Takeda, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1987, Ser. No. 19,560

Claims priority, application Japan, Mar. 3, 1986, 61-47114; Mar. 3, 1986, 61-47115; Aug. 27, 1986, 61-200699

Int. Cl.[4] G03B *27/36, 27/38*

U.S. Cl. 355—58 **15 Claims**



1. A magnification varying device for use in an electrophotographic copying machine of the scan type having a projection lens, means for relatively scanning an original with respect to the projection lens and a deflection mirror for deflecting the projected light from the projection lens toward a photoconductive member, the device comprising:

a drive source,

lens shifting means coupled to the drive source for shifting the projection means substantially along the optical axis of the lens,

means for holding the deflection mirror shiftably in the direction of the optical axis of projection, and

drive force transmission means coupled to the drive source and the deflection mirror for shifting the mirror with the shift of the projection lens, the transmission means including an eccentric cam and a cam follower in contact with the eccentric cam, the eccentric cam having the largest radius at a position where the cam follower is in contact with the cam when giving a magnification of $\times 1$ and shaped to gradually decrease in radius from the largest radius.

4,800,415

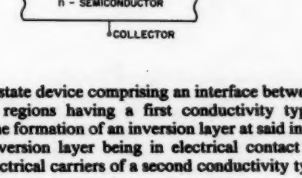
BIPOLAR INVERSION CHANNEL DEVICE

John G. Simmons, Bethlehem, Pa., and Geoffrey W. Taylor, Berkeley Heights, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 653,440, Sep. 21, 1984, abandoned. This application Jan. 22, 1987, Ser. No. 9,620

Int. Cl.[4] H01L *29/72, 29/161, 49/02, 29/80*

U.S. Cl. 357—34 **52 Claims**



1. A solid state device comprising an interface between first and second regions having a first conductivity type, and adapted to the formation of an inversion layer at said interface, with said inversion layer being in electrical contact with a source of electrical carriers of a second conductivity type and

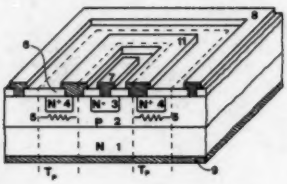
adapted to control electrical carriers of said first conductivity type flowing between said first and second regions.

4,800,416

BIPOLAR POWER TRANSISTOR HAVING BYPASSABLE INCORPORATED-BASE BALLAST RESISTANCE

Salvatore Musemeci, Giarre, Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed May 8, 1984, Ser. No. 608,084
Claims priority, application Italy, May 16, 1983, 6613 A/83
Int. Cl.[4] H01L *29/72*
U.S. Cl. 357—34 **3 Claims**



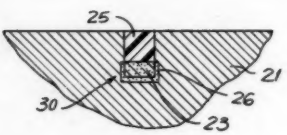
1. A bipolar power transistor comprising: a semiconductor body including a collector region of a first type of conductivity; a base region with a second type of conductivity that is opposite to that of said first type of conductivity, said base region being arranged on said collector region so as to form a junction therewith and having one upper surface which is opposite to said collector region; an emitter region of said first type of conductivity which extends into said base region from an upper surface thereof so as to form a junction therewith; a first and a second and a third conductive means which respectively establish ohmic contacts with said collector and base and emitter regions; and an additional region of said first type of conductivity which extends into said base region from said upper surface thereof and forms therewith a junction delimiting a resistive path through said base region along the base-collector junction but outside of the emitter-collector path; a fourth conductive means which establishes an ohmic contact with said base region and with said additional region, said fourth conductive means being located on said upper surface on a part of said additional region which is closest to said emitter region.

4,800,417

IMPROVED SEMICONDUCTOR DEVICE HAVING A POLYCRYSTALLINE ISOLATION REGION

Juri Kato, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,790
Claims priority, application Japan, Jun. 25, 1981, 56-98602; Jun. 25, 1981, 56-98603
Int. Cl.[4] H01L *29/04, 27/12*
U.S. Cl. 357—59 **4 Claims**



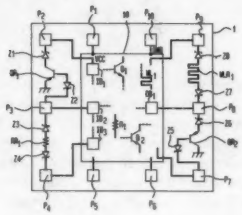
1. In a semiconductor device including a monocrystalline semiconductor substrate having an upper surface formed with a groove, the improvement which comprises a polycrystalline semiconductor region submerged in the groove in the substrate and below the upper surface of the substrate, said polycrystalline region being in direct contact with the monocrystalline semiconductor substrate, and an insulating film region on said polycrystalline semiconductor region and in said groove and forming a flat surface with said upper surface of the monocrystalline semiconductor substrate for forming an isolated polycrystalline region, said isolated polycrystalline region being ion implanted.

4,800,418

INTEGRATED CIRCUIT WITH IMPROVED MONITORING FUNCTION BY USE OF BUILT-IN ELEMENTS

Yoshinobu Natsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,060
Claims priority, application Japan, Sep. 6, 1984, 59-186803
Int. Cl.[4] H01L *23/48*
U.S. Cl. 357—68 **18 Claims**



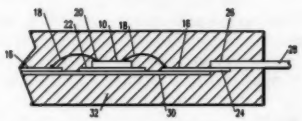
1. A semiconductor integrated circuit comprising: a semiconductor chip, a functional circuit formed on said semiconductor chip, said functional circuit including at least one functional element, a plurality of bonding pads formed on said semiconductor chip and electrically connected to said functional circuit, at least one reference element formed on said semiconductor chip, the type of said reference element being analogous to that of said functional element, and switching means coupled between said reference element and one of said bonding pads, said functional circuit operating by a given range of voltages, said switching means assuming a conducting state only when a voltage outside said given range of voltages is applied to said one bonding pad.

4,800,419

SUPPORT ASSEMBLY FOR INTEGRATED CIRCUITS

Jon Long, Livermore, and V. K. Sahakian, Los Altos Hills, both of Calif., assignors to LSI Logic Corporation, Santa Clara, Calif.

Filed Jan. 28, 1987, Ser. No. 8,208
Int. Cl.[4] H01L *23/48, 23/28*
U.S. Cl. 357—70 **4 Claims**



1. A composite package assembly for supporting an integrated circuit chip comprising;

a relatively thin flexible tape-like structure having inner lead fingers, and having outer lead fingers electrically connected to said inner lead fingers;

a die attach pad having one surface attached to said structure;

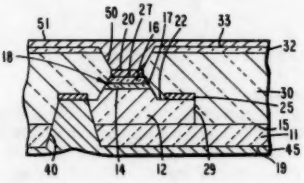
an integrated circuit chip attached to the other exposed surface of said die attach pad;
a rigid lead frame joined to said structure and having internal leads aligned to and connected to said outer lead fingers;
package leads electrically connected to said internal leads for connection to external circuitry; and
metallic wires connecting said integrated circuit chip to said inner lead fingers.

4,800,420

TWO-TERMINAL SEMICONDUCTOR DIODE ARRANGEMENT

James C. Chen, Torrance; Wah S. Wong, Montebello, and Cheng K. Pao, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 14, 1987, Ser. No. 49,875
Int. Cl.[4] H01L *23/36, 23/14, 21/84*
U.S. Cl. 357—76 **18 Claims**



1. A two-terminal semiconductor diode arrangement, comprising:
a semi-insulating substrate having first and second major surfaces;
a semiconductor diode located on the first major surface of said semi-insulating substrate, said diode having an upper portion and a lower base portion, the lower base portion having an annular upper surface extending outwardly from the base of the upper portion;
a first metal contact in electrical contact with the upper portion of said semiconductor diode;
a second metal contact in the shape of a ring located on and making electrical contact to the annular upper surface of the lower base portion;
a layer of dielectric material disposed over said semiconductor diode, first and second metal contacts, and first major surface of said substrate, said dielectric layer having a first hole therethrough to said first metal contact;
metallic heat sink means thermally and electrically coupled to said first metal contact through said first hole, said semi-insulating substrate and lower base portion having a second offset hole extending vertically therethrough to said ring-shaped metal contact; and
a metallic bias line making electrical contact to said second ring-shaped contact through said second offset hole.

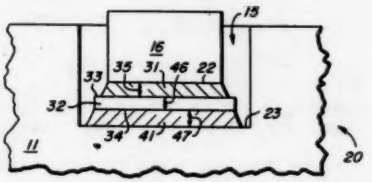
4,800,421

GLASS BONDING MEANS AND METHOD

Earl K. Davis, Tempe; James E. Drye, and David J. Reed, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 696,219, Jan. 29, 1985, Pat. No. 4,592,794, which is a division of Ser. No. 614,573, May 25, 1984, Pat. No. 4,515,898, which is a continuation-in-part of Ser. No. 298,435, Sep. 1, 1981, abandoned. This application Jan. 27, 1986, Ser. No. 822,571
Int. Cl.[4] H01L *39/02*
U.S. Cl. 357—80 **6 Claims**

1. A semiconductor device comprising:
a ceramic base having a predetermined ceramic coefficient of expansion, yield strength, and a melting temperature;
a ductile foil bonded to at least a portion of said ceramic base, said foil having a predetermined foil yield strength and melting temperature;
a die bonding material bonded to at least a portion of said foil, said die bonding material having a predetermined coefficient of expansion, yield strength, and softening temperature;
a semiconductor die bonded to at least a portion of said die bonding material, said die having predetermined die coefficient of expansion, yield strength, and melting point;
wherein said foil yield strength is less than said ceramic, die bonding material, and die yield strengths, wherein said die bonding material has a coefficient of expansion intermediate between said ceramic and die coefficient of expansion,



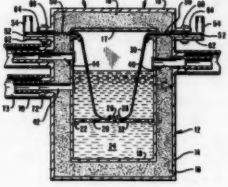
and wherein said die bonding material has a softening temperature less than said die, foil, and ceramic melting temperatures; and
a foil bonding glass region between said foil and said base, for bonding said foil to said base, said foil bonding glass having a predetermined coefficient of expansion, yield strength, and softening temperature, and wherein said foil bonding glass coefficient of expansion is less than said die bonding material coefficient of expansion, wherein said foil bonding glass softening temperature is intermediate between said foil melting temperature and said die bonding material softening temperature, and wherein said foil bonding glass yield strength is greater than said foil yield strength.

4,800,422

FROSTLESS INTERFACE SUPERCOOLED VLSI SYSTEM

Ikuo J. Sanwo, San Marcos, and Gregory H. Milby, San Diego, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed May 7, 1987, Ser. No. 46,764
Int. Cl.[4] H01L *23/44, /23/46, 23/36*
U.S. Cl. 357—82 **11 Claims**



1. A system for supercooling a semiconductor chip comprising:
a double wall vessel;
a double wall top for sealing said double wall vessel, wherein said double wall vessel and top each have inner and outer walls and a space therebetween;
a temperature insulating material filling said space;
a semiconductor chip;

means within said vessel for supporting said semiconductor chip;

electrical conductor means connected to said semiconductor chip, said electrical conductor means extending from said semiconductor chip to the top of the inner wall of said vessel;

carbon conductors connected to said electrical conductor means from the inner wall to the outer wall of said vessel and sandwiched between said temperature insulating material of said vessel and said top;

electrical conductor means connected to said carbon conductors at the outer wall of said vessel; and

a supercooling liquid within said vessel covering said semiconductor chip.

4,800,423

INTERFACE MODULE FOR SUPERIMPOSING ALPHANUMERIC CHARACTERS UPON RGB VIDEO SIGNALS

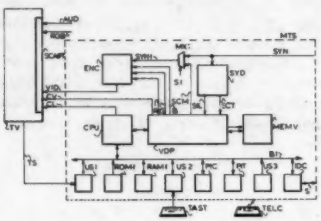
Silvano Appiano, Montafia; Wolmer Chiarottino, Villanova; Mauro Pozzi, Turin, and Aldo Reali, Caselle Torinese, all of Italy, assignors to Sip- Societa Italiana per L'Esercizio Delle Telecomunicazioni S.P.A., Turin, Italy

Filed Nov. 6, 1987, Ser. No. 118,579

Claims priority, application Italy, Dec. 18, 1986, 67943 A/86

Int. Cl.[4] H04N *9/76, 5/272*

U.S. Cl. 358—21 R **6 Claims**



1. An interface module for superimposing alphanumeric characters upon RGB video signals, said alphanumeric characters and said RGB video signals being supplied to corresponding inputs of a SCART connector of a display device, characterized in that it basically comprises:

a video signal generator (VDP) relevant to said alphanumeric characters it extracts from a video memory (MEMV), said generator supplying at the output three primary colour components (R, G, B) of said characters and a base-band video composite synchronism signal (SCM);

a video encoder (ENC) converting said three components of primary colours (R, G, B) and said video-composite synchronism signal (SCM) it receives from said video signal generator (VDP) in a base-band standard colour video signal (VID) which supplies at the input for alphanumeric characters of said SCART connector (SCART);

a data processing unit (CPU) which, on the basis of commands it receives from data input devices (TS, TAST, TELC, S), controls said video signal generator (VDP) supplying it with information determining the shape, type and position of the alphanumeric characters of a video page, and information relevant to different display types and such that said video-signal generator (VDP) may control the switching input (CV) of said SCART connector (SCART).

4,800,424

ENDOSCOPE LIGHT SOURCE APPARATUS WITH A LIGHT EMITTING TIMING DELAYING CIRCUIT

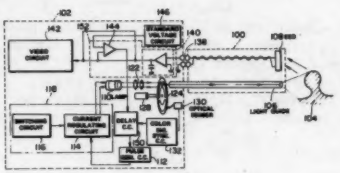
Toshiaki Noguchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,604

Claims priority, application Japan, Nov. 13, 1986, 61-270461; Apr. 7, 1987, 62-85528

Int. Cl.[4] A61B *1/04;* **H04N** *7/18*

U.S. Cl. 358—98 **7 Claims**



1. An endoscope light source apparatus for feeding an illuminating light to an endoscope comprising:

a lamp capable of flashing;

a lighting circuit feeding electric power to said lamp;

a rotary filter interposed in a light path of a color developing light of said lamp and fitted with respectively different color transmitting filters in a plurality of aperture windows provided in a light intercepting plate;

a rotating driving means rotating said rotary filter;

a color filter detecting means detecting the color transmitting filters interposed in said light path and outputting a detecting signal; and

a light emitting timing delaying means outputting into said lighting circuit a trigger signal delayed by using the detecting signal of said color filter detecting means.

4,800,425

SYSTEM FOR DISPLACEMENT VECTOR SEARCHING DURING DIGITAL IMAGE ANALYSIS

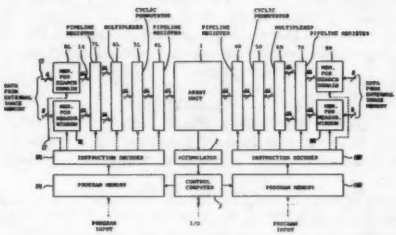
Wolfgang Schwerzel, Erbach, and Georg Kummerfeldt, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 18, 1987, Ser. No. 134,872

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644407; Jun. 26, 1987, 3721074

Int. Cl.[4] H04N *7/137;* **G06F** *15/70*

U.S. Cl. 358—136 **8 Claims**



1. A system for displacement vector searches during digital analysis of a time-sequence of images having digitalized gray values, the displacement vector searches being conducted by dividing pixel data for a predetermined image in the sequence into a regular grid of blocks, and determining displacement of the blocks with respect to the image immediately earlier in the sequence, for each block the determination of the displacement

including comparing a predetermined subquantity of the pixel data for the block with a plurality of corresponding subquantities of the pixel data for the earlier image to generate a plurality of sums of difference amounts between the gray values of the pixel data in the predetermined subquantity and the gray values of the pixel data in the corresponding subquantities, and selecting the minimum of the sums of the difference amounts, said system comprising:

array unit means, having a plurality of pixel data inputs, for calculating sub-totals of the difference amounts for a plurality of pixel pairs in parallel, each pixel pair including a pixel in the predetermined image and a pixel in the earlier image;

accumulator means, connected to the array unit means, for adding the sub-totals to one another to form the sums of the difference amounts; and

control computer means, connected to the accumulator means, for determining the components of a displacement vector for each block by selecting the minimum of the sums of the difference amounts.

4,800,426

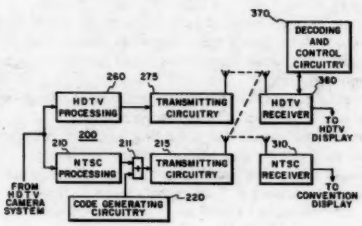
METHOD AND SYSTEM FOR TRANSMISSION AND RECEPTION OF HIGH DEFINITION

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed May 18, 1987, Ser. No. 51,505

Int. Cl.[4] H04N *7/04, 7/087, 5/50*

U.S. Cl. 358—141 **18 Claims**



17. For use in a system for transmitting and receiving high definition television signals representative of images of a scene, the system including a transmitter and a receiver, a transmitter for said system comprising:

means for deriving first and second television signals representative of said images;

means for generating a code signal representative of a transmission frequency channel over which said second television is to be transmitted;

means for combining said code signal with said first television signal; and

means for transmitting said first television signal over a first transmission frequency channel and for transmitting said second television signal over a second transmission frequency channel as is represented by said code signal, said second transmission frequency channel being not adjacent to said first transmission frequency channel;

whereby when said first television signal is received at a receiver, said code signal can be recovered therefrom and utilized to automatically tune a tuner to receive said second television signal, said second television signal to be used for enhancing said first television signal to obtain a high definition television signal representative of said images.

4,800,427

METHOD OF COMPATIBLY INCREASING RESOLUTION IN A COLOR TELEVISION SYSTEM

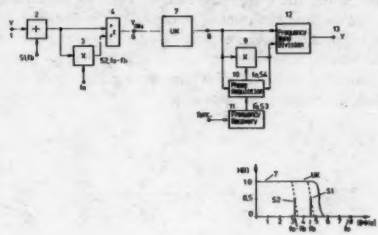
Martin Plantholt, Hemmingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 127,272

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640848

Int. Cl.[4] H04N *7/12, 7/087*

U.S. Cl. 358—141 **11 Claims**



1. In a method for compatibly increasing resolution in a color television system, which system includes a transmitter in which part of a television picture signal is converted in frequency by offset modulation with spectral addition of spectral components transmitted in the base band and in which a reference signal for subsequent offset demodulation is produced in coincidence with a blank picture line during vertical blanking intervals, and a receiver which receives the converted signal part, including spectral components, and the reference signal and in which the converted signal part is reconverted by offset demodulation, the improvement comprising: forming the reference signal at the transmitter such that the reference signal has first and second components with respectively different frequencies; causing the first component to represent phase information about the spectral addition of the spectral components transmitted in the base band and the spectral components reconverted by offset demodulation; and causing the second component to contain information regarding the phase of the offset modulation.

4,800,428

CIRCUIT ARRANGEMENT FOR A TELEVISION RECEIVER COMPRISING A VIDEO TEXT DECODER

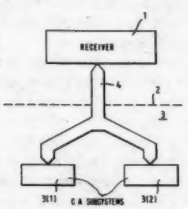
Martin H. Johanndeiter, and Detlef W. K. Oldach, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1987, Ser. No. 48,196

Claims priority, application Fed. Rep. of Germany, May 22, 1986, 3617251

Int. Cl.[4] H04N *7/087, 9/74, 5/262*

U.S. Cl. 358—142 **12 Claims**



1. A circuit arrangement for a television receiver comprising

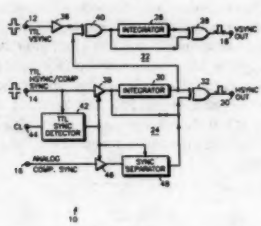
a television signal decoder, said television signal decoder deriving from a television signal applied to its input a luminance signal supplied by a luminance signal output via a low-pass filter arrangement for suppressing a chrominance signal, and comprising a video test decoder, producing signals from video text data from which driving signals for a picture display device can be derived, characterized in that the input of the video text decoder is coupled to the luminance signal output, in that the low-pass filter arrangement has a first attenuation characteristic to suppress the chrominance signal and a second attenuation characteristic to allow all video text data to pass in that the attenuation characteristic of the low-pass filter arrangement is changed over by means of a change-over signal derived from the television signal by a change-over device so that the second attenuation characteristic of the low-pass filter arrangement is switched on at least during the periods of time in which the video text data occur.

4,800,429

AUTO SYNC POLARITY CONTROL CIRCUIT FOR USE WITH MONITOR

Geoffrey W. Perkins, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 14, 1988, Ser. No. 168,108
Int. Cl.[4] H04N 5/04
U.S. Cl. 358—148 **7 Claims**



1. Circuit for providing single polarity pulses at first and second outputs in response to receiving applied digital input signals, comprising:

first circuit means responsive to either positive or negative applied input signals for providing single polarity pulses at the first circuit output including a first integrator having an input coupled to a first input of the circuit and an output; and a first gate circuit having an output coupled to the first circuit output, a first input coupled to said input of said first integrator and a second input coupled to said output of said first integrator; and

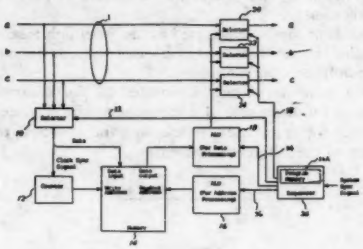
second circuit means responsive to either negative or positive input signals for providing single polarity pulses at the second circuit output including a second integrator having an input and an output; a second gate circuit having an output coupled to the second circuit output, a first input coupled to said output of said second integrator, and a second input coupled to said input of said second integrator; and a third gate circuit having an output coupled to said input of said second integrator, a first input coupled to a second input of the circuit and a second input coupled to said output of said first integrator.

4,800,430

FUNDAMENTAL UNIT FOR PROCESSING VIDEO SIGNALS

Keinosuke Murakami, Machida; Kazumasa Enami, Atsugi, and Nobuyuki Yagi, Kawasaki, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed May 30, 1986, Ser. No. 879,108
Claims priority, application Japan, Oct. 1, 1984, 59-204156; Sep. 30, 1985, PCT/JP85/00539
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—160 **9 Claims**



1. A fundamental unit for processing video signals, comprising:

(a) video signal selection means, receiving video signals transmitted through a plurality of first transmission lines, for selecting one of the video signals, the selected video signal having a sync signal;

(b) memory means for storing therein the selected video signal;

(c) write control means for controlling said memory means to store the selected video signal as data in said memory means by utilizing the sync signal of said video signal as a control signal;

(d) readout means for addressing said memory means to read out said data from said memory means;

(e) arithmetic means for operating arithmetically on said data read out by said readout means;

(f) output means for outputting, on a respective plurality of second transmission lines, signals selected from the result of the operation of said arithmetic means and the video signals on said first transmission lines; and

(g) programmable control means for controlling said video signal selection means, said readout means, said arithmetic means, and said output means in accordance with the timing of a system sync signal, said programmable control means having a program memory to store a program for predetermined processing of the selected video signal,

wherein said programmable control means includes means for generating a clock signal, and wherein said write control means includes an address counter which counts said clock signal, said address counter being reset by said sync signal of the selected video signal.

4,800,431

VIDEO STREAM PROCESSING FRAME BUFFER CONTROLLER

Michael F. Deering, Mountain View, Calif., assignor to Schlumberger Systems and Services, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 590,980, Mar. 19, 1984, abandoned. This application Jul. 29, 1986, Ser. No. 892,727
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—160 **15 Claims**

1. Digital video information control apparatus for use on a video processing system in conjunction with a digital memory for control and storage of digital video information, comprising:

programmable input means, for input of said digital video

information for selective storage in the digital memory and for output of said digital video information, comprising

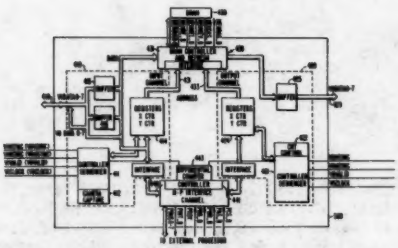
a plurality of programmable control registers for controlling the input means,

video input buffers for buffered input and output of said digital video information,

a plurality of control signal inputs for input of data validation and synchronization signals, and a clock input;

programmable output means, for selective output of said digital video information stored in the digital memory, comprising

a plurality of programmable control registers for controlling the output means,



video output buffers for buffering output of said digital video information,

a plurality of control signal outputs for output of said data validation and synchronization signals, and a clock signal output;

processor interface means, coupled to the video input buffers and the programmable registers, for bidirectional exchange of data with the input buffers for storage to and recall from the digital memory and for transfer of control data to the programmable registers; and

memory interface means, for exchange of digital video data with the digital memory and the video buffers and for providing control signals for control of the memory responsive to control signals from the input and output means programmable control registers.

4,800,432

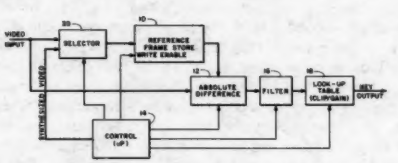
VIDEO DIFFERENCE KEY GENERATOR

Ronnie D. Barnett, Nevada City, and Steven M. Parkes, Davis, both of Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Oct. 24, 1986, Ser. No. 922,976

Int. Cl.[4] H04N *5/14, 5/275, 9/75*

U.S. Cl. 358—160 **5 Claims**



1. A video difference key generator comprising:

means for storing a predetermined reference video image;

means for enabling the storing means to receive the reference video image, the reference video image being provided via an input selector; and

means for comparing the reference video image from the storing means with an input video image from an input bus to produce a desired key output.

4,800,433

PROGRESSIVE SCANNING CONVERSION SYSTEM FOR TELEVISION IMAGE DISPLAY APPARATUS

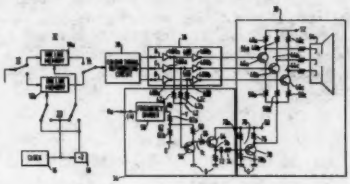
Kazuhiro Kamemoto, Kumagaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 20, 1988, Ser. No. 146,178

Claims priority, application Japan, Jan. 21, 1987, 62-9995

Int. Cl.[4] H04N *5/14, 9/20*

U.S. Cl. 358—168 **8 Claims**



1. A progressive scanning conversion circuit for converting video signals corresponding to an original image from a predetermined interlaced format scan line rate to progressive format video signals having an increased scan line rate, the video signals each having a brightness level corresponding to a portion of the original image, comprising:

means (32) responsive to receipt of a video signal having the interlaced format scan line rate for increasing the scan line rate of the video signal to form a progressive format video signal;

drive means (30) for amplifying the progressive format video signal, characterised in that

the progressive scanning conversion circuit further comprises:

means (36) for generating a luminance signal corresponding to the brightness level of the corresponding portion of the original image in response to the progressive format video signal; and

brightness compensation means (34) for generating a brightness compensation signal in response to the luminance signal;

and wherein:

the drive means (30) is provided for adjusting the brightness level thereof in response to the brightness compensation means (34).

4,800,434

POWER SOURCE FOR ELECTRONIC TUNING TUNER

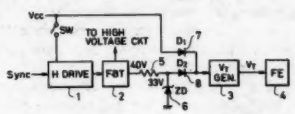
Yoshiro Sugai, and Hiroyuki Kimura, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,392

Claims priority, application Japan, Sep. 20, 1985, 60-144587

Int. Cl.[4] H04N *3/18, 5/44*

U.S. Cl. 358—190 **4 Claims**



1. A power source for an electronically tuned tuner, comprising:

an electronic tuning front end;

a tuning voltage generating circuit for supplying a tuning voltage to said front end;

a horizontal deflection circuit;

a fly-back transformer receiving a voltage signal from said horizontal deflection circuit;

a DC power source of a voltage lower than an output voltage of said fly-back transformer; and

power source change-over circuit means connected between both an output of said fly-back transformer and an output of said DC power source and an input to said tuning voltage generating circuit, said change-over circuit means for applying a source voltage from said fly-back transformer to said tuning voltage generating circuit in a case of reception of television signals, and for applying a source voltage from said DC power source in a case other than reception of television signals, wherein said change-over circuit comprises a first diode connected between said input of said tuning voltage generating circuit and said output of said fly-back transformer and a second diode connected between said input of said tuning voltage generating circuit and said output of said DC power source.

4,800,435

METHOD OF DRIVING A TWO-DIMENSIONAL CCD IMAGE SENSOR IN A SHUTTER MODE

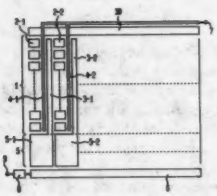
Sadayuki Ikeda; Hidehiko Inoue; Kiyotake Nagai; Hiroshi Nakajima, and Yasuichi Ushiyama, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 20, 1986, Ser. No. 932,671

Claims priority, application Japan, Nov. 20, 1985, 60-261779; Aug. 18, 1986, 61-193545; Oct. 3, 1986, 61-236729

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213.19 **7 Claims**



5. An image sensor comprising a plurality of photodiode arrays, each of said photodiode arrays containing first photodiodes designated for an odd television field and second photodiodes designated for an even television field, said first photodiodes and said second photodiodes being alternately arranged; a plurality of vertical transfer register means respectively coupled to the plurality of said photodiode arrays for receiving electric charges from said first photodiodes and said second photodiodes; storage means coupled to the plurality of said vertical transfer register means for receiving the electric charges from the plurality of said vertical transfer register means; horizontal transfer register means coupled to said storage means for transferring the electric charges delivered from said storage means in a horizontal direction to output a video signal; means for generating first high-speed pulses to sweep away electric charges contained in said vertical transfer register means and said storage means in the vertical direction during one vertical blanking period in one frame period; means for generating a first transfer pulse after generation of said first high-speed pulses to transfer electric charges accumulated in said first photodiodes to said vertical transfer register means during said vertical blanking period; means for generating second high-speed pulses after generation of said first transfer pulse to transfer the electric charges stored in said vertical transfer register means to said storage means during said vertical blanking period; means for generating a second transfer pulse after generation of said second high-speed pulses to transfer the electric charges accumulated in said second photodiodes to said vertical transfer register means; means for generating third transfer pulses after generation of said second transfer pulse to shift the electric charges stored in said storage means and in said vertical transfer register means into said horizontal transfer register means continuously during a television frame period; means for generating a fourth transfer pulse to transfer electric charges accumulated in said first photodiodes to said vertical transfer register means at a selected time point in said television frame period; and means for generating a fifth transfer pulse after said fourth transfer pulse by a predetermined period to transfer electric charges accumulated in said second photodiodes to said vertical transfer register means, whereby an effective accumulation period in said first and second photodiodes can be controlled by selecting said time point in generating said fourth transfer pulse.

4,800,436

TELEVISION SYSTEM WITH IMPROVED TEMPORAL RESOLUTION ON DISPLAY OF A TELEVISION SIGNAL

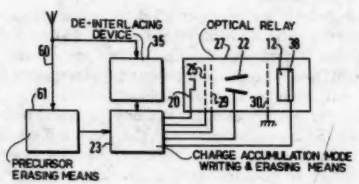
Rémy Polaert, Villecresnes, and Bruno Schorter, Morsang S/Orge, both of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,923

Claims priority, application France, Mar. 4, 1986, 86 02993

Int. Cl.[4] H04N *5/74*

U.S. Cl. 358—232 **6 Claims**



1. An optical relay comprising an electrically insulating material target plate for passing light depending on the electric field parallel to the direction of propagation of this light, and said target plate becomes ferro-electric below the Curie temperature, in a region of which the optical relay operates for supplying a final picture, means for having a first side of the target plate scanned by an electron beam produced by an electron gun, an anode in the form of a grid, suitable for receiving the secondary electrons caused by this beam, an optically transparent and electrically conducting thin plate provided against the second side of the target, a charge accumulation mode writing and erasing means through which the target plate can be written and erased in the charge accumulation mode for applying to the optical relay a video information component of a video signal formed by a sequence of scanned lines, characterized in that said charge accumulation mode writing and erasing means comprises a video amplifier applying video modulation to a wehnelt electrode in said optical relay during a write mode, and polarizing generators coupled to the grid-shaped anode, the transparent thin plate and an electron beam deflection device, said charge accumulation mode writing and erasing means cooperating with precursor erasing means acting on a limited number q of scanning lines positioned beyond the line n on which a writing operation is effected.

4,800,437

IMAGE PHOTOGRAPHY APPARATUS HAVING SWITCH IN REMOTE CONTROL CABLE FOR PREVENTING ERRONEOUS PHOTOGRAPHY

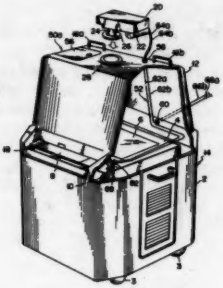
Takamasa Hosoya, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1986, Ser. No. 907,833

Claims priority, application Japan, Sep. 30, 1985, 60-149128[U]

Int. Cl.[4] H04N 5/84; G03B 1/00

U.S. Cl. 358—244 13 Claims



1. An image photography apparatus for photographing from a TV monitor, comprising:

a casing which is shaped substantially like a box;

a TV monitor received in the casing;

a power supply source for the TV monitor;

camera means detachably coupled to the casing for photographing an image displayed on the TV monitor, said camera means having a power source which is separate from the power source for the TV monitor, and a pair of remote control cables for actuating said camera means by remote control for causing remote controlled photographing of the image on the TV monitor; and

switch means, including a switch contact electrically inserted in series with one of the remote control cables, said switch means including means for opening/closing the switch contact in response to on/off operation of the power supply source of the TV monitor.

4,800,438

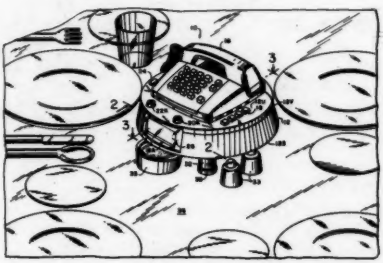
TELEPHONE CONSOLE FOR RESTAURANT TABLES

Seymour C. Yuter, 407 Cedar Dr. W., Briarcliff Manor, N.Y. 10510

Filed Dec. 8, 1987, Ser. No. 129,980

Int. Cl.[4] H04N 5/64, 5/645; H04R 1/02, 1/21

U.S. Cl. 358—254 54 Claims



41. A restaurant console system comprising:

(A) a chassis adapted to be mounted on a support member extending above a table in the restaurant;

(B) a lampshade support adapted to fit over said chassis;

(C) a telephone mounted on the top of said lampshade support;

(D) a lamp socket connected to said chassis and adapted to hold a lamp outside said chassis and beneath said lampshade support, the lamp when lighted illuminating a portion of the table around said lampshade support;

(E) a television set mounted on said chassis;

(F) a video source to feed video signals for two television channels to said chassis;

(G) television channel separation means mounted on said chassis and responsive to separate said video signals; and

(H) switch means for feeding one of said separated television channels to said television set.

4,800,439

DATA COMMUNICATION APPARATUS ADAPTED TO PERFORM DATA COMMUNICATION AND SPEECH COMMUNICATION

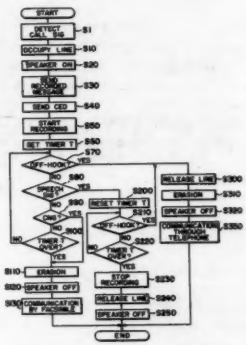
Motoaki Yoshino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,387

Claims priority, application Japan, Feb. 26, 1986, 61-042460

Int. Cl.[4] H04N 1/32

U.S. Cl. 358—257 15 Claims



1. A data communicating apparatus comprising:

means for performing data communication in a data communication mode;

means for performing speech communication in a speech communicating mode;

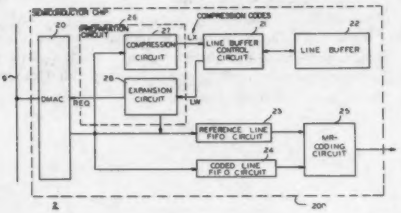
detection means for detecting a signal from a calling station indicating that the calling station is in a data communication mode; and

control means for switching, during speech communication in the speech communication mode by said speech communication means, said data communicating apparatus from the speech communication mode to the data communication mode in response to the detecting of said detection means.

4,800,440
DIGITAL IMAGE SIGNAL CODING/DECODING CIRCUIT WITH BUFFER MEMORY STORING REFERENCE LINE AS COMPRESSION CODES

Hidefumi Kurokawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 23, 1986, Ser. No. 946,434
Claims priority, application Japan, Dec. 23, 1985, 60-289570
Int. Cl.[4] H04N *1/413, 1/41*
U.S. Cl. 358—260 **17 Claims**

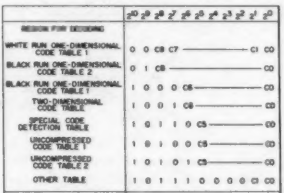


1. A digital signal coding/decoding circuit comprising coding/decoding means responsive to an adjacent two digital signal lines for coding/decoding digital signals line by line, one of said two digital signal lines being a line which is to be coded or decoded, the other of said two digital signal lines being a reference line, first means responsive to the reference line for producing a compression code, a line buffer coupled to said first means for temporarily storing the compression code, second means coupled to said line buffer for expanding the compression code when it is read out of the line buffer to reproduce the reference line, and an interface circuit coupled to said second means and said coding/decoding means for applying said line to be coded or decoded and said reference line reproduced by said second means to said coding/decoding means.

4,800,441
BINARY DATA COMPRESSION AND EXPANSION PROCESSING APPARATUS

Fumitaka Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1987, Ser. No. 18,334
Claims priority, application Japan, Feb. 28, 1986, 61-43693
Int. Cl.[4] H04N *1/419*
U.S. Cl. 358—261.1 **18 Claims**


REGION FOR DECODING
WHITE RUN ONE-DIMENSIONAL CODE TABLE 1
BLACK RUN ONE-DIMENSIONAL CODE TABLE 2
BLACK RUN ONE-DIMENSIONAL CODE TABLE 1
TWO-DIMENSIONAL CODE TABLE
SPECIAL CODE DETECTION TABLE
UNCOMPRESSED CODE TABLE 1
UNCOMPRESSED CODE TABLE 2
OTHER TABLE
REGION FOR ENCODING
RUN LENGTH TABLE

1. A binary data compression and expansion processing apparatus which can decode code data in a pipeline manner, comprising:

holding means for receiving the code data having a first predetermined length, and for holding the latest code data for a second predetermined length;

block output means for receiving the held code data in said holding means, for producing a code data block from input control data and a code data portion selected in accordance with bit position data input thereto, and for outputting the produced code data block in accordance with an output instruction;

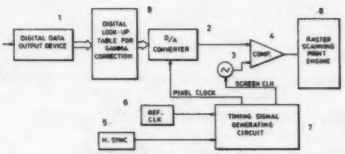
decoding means for generating data indicating a length of a code unit and run length data corresponding to the code unit beginning from a leading bit of the code data block in accordance with an input of the code data block; and

bit position designation means for outputting the held bit position data to said block output means, and for updating the bit position data in accordance with the code unit length data from said decoding means.

4,800,442
APPARATUS FOR GENERATING AN IMAGE FROM A DIGITAL VIDEO SIGNAL

John H. Riseman, deceased, late of Cambridge, Mass. (by Jean M. Riseman, executrix); John J. Smith, Cambridge; Alice M. d'Entremont, Boston, and Craig E. Goldman, Natick, all of Mass., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 931,941, Nov. 19, 1986, abandoned, which is a continuation of Ser. No. 765,938, Aug. 15, 1985, abandoned. This application May 18, 1987, Ser. No. 51,154
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **96 Claims**



1. An image processing apparatus responsive to a digital input signal, said apparatus comprising:

a raster scanning print engine for generating a series of successive scan lines;

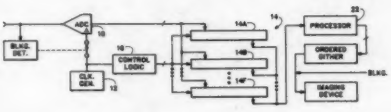
means for generating a pulse-width-modulated signal from a digital input signal input to said apparatus; and

means for applying said pulse-width-modulated signal to said print engine to cause said print engine to generate each said scan line as a succession of line-segments, the lengths of which are controlled in accordance with said pulse-width-modulated signal to produce a variable density line screen from said line segments, said line screen comprising a plurality of columns of said line segments.

4,800,443
METHOD AND APPARATUS FOR CARRYING OUT A DITHERING OPERATION

Regis J. Crinon, Beaverton, and Yih-Chyun Jenq, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 14, 1987, Ser. No. 85,425
Int. Cl.[4] H04N *1/40*
U.S. Cl. 338—280 **8 Claims**



1. A method of controlling operation of an imaging device in response to a two-dimensional array of pixel values f(u,v) representing an image having an edge of amplitude C, comprising:

(a) forming an enhanced array of pixel values g(u,v) from the values f(u,v),

(b) forming atwo-dimensional array of binary values h(u,v) by applying the enhanced array to a two-dimensional array of threshold values t(u,v), and

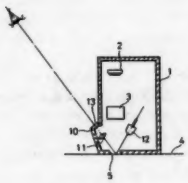
(c) applying the two-dimensional array of binary values to the imaging device for controlling the operation thereof, wherein $g(u,v)=m_f+k[f(u,v)-m_f]$ where m_f is the average value of f(u,v) over a predetermined number of pixels in the neighborhood of the pixel (u,v) and k is dependent on both the standard deviation in f(u,v) over a predetermined number of pixels in the neighborhood of the pixel (u,v) and a number which is inversely proportional to the distance between the point (u,v) and a point (x,y) such that $t(x,y)-t(u,v)$ is less than C.

4,800,444

IMAGE SCANNER

Motoyuki Suzuki, and Kazuo Kikuchi, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 19, 1986, Ser. No. 944,810
Claims priority, application Japan, Feb. 5, 1986, 61-14506[U]
Int. Cl.[4] H04N *1/024*
U.S. Cl. 358—294 **3 Claims**



1. An image scanning system for reading by an operator of data registered on the surface of a fixed original comprising:

an image sensor;

a case for containing said image sensor, said case having a side wall and a connecting bottom portion;

an opening in said bottom portion for providing access for reading data on said surface of said fixed original;

a window formed in a portion of said side wall closely spaced from said opening for monitoring data being read, said window having a member on which an image is formed; and

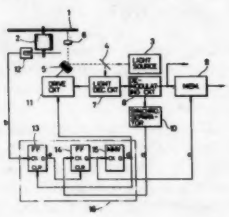
means disposed within said case for directing an image of the data being read from said fixed original to said window in said side wall for viewing by said operator.

4,800,445

VIDEODISK PLAYER

Masao Kanda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 27, 1986, Ser. No. 833,703
Claims priority, application Japan, Feb. 28, 1985, 60-29372[U]
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—342 **10 Claims**



1. A controller for a videodisk player for playing back video signals through a pickup from a disk rotating at a constant linear velocity, said controller comprising:

a first circuit for generating a rotational pulse synchronous with the rotation of said disk;

memory means responsive to an enabling signal for storing the video signals played back;

driving means responsive to a jump signal for causing said pickup to execute a jump of at least one track; and

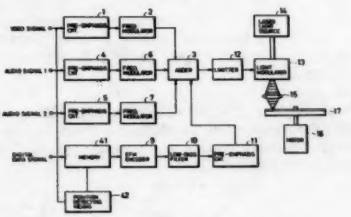
control circuit means responsive to at least said rotational pulse for generating said enabling signal, for thereafter terminating said enabling signal upon completion of storage in said memory means of desired data derived from the played back video signal, and for generating said jump signal in response to the termination of said enabling signal.

4,800,446

VIDEO DISK RECORDED WITH VIDEO AND DIGITAL DATA AND RECORDING/REPRODUCING APPARATUS THEREFOR

Hitoshi Kanamaru, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 18, 1986, Ser. No. 931,826
Claims priority, application Japan, Nov. 18, 1985, 60-258325
Int. Cl.[4] H04N *5/92*
U.S. Cl. 358—343 **4 Claims**



1. A video disk recording apparatus for recording both a television picture signal and a digital data signal onto one and the same track of a video disk through frequency-division multiplexing, said video disk recording apparatus comprising:

means receiving a television picture signal for modulating said television picture signal;

means receiving a digital data signal for dividing said digital data signal into blocks each composed of a predetermined number of bits;

means receiving an output of said dividing means for modulating said divided digital data signal;

means receiving said television picture signal for detecting from said television picture signal a first vertical synchronizing pulse located at least one field before a frame or a field of a television signal corresponding to each of said blocks so that a terminal part of said each block is disposed in the vicinity of a position corresponding to a second vertical synchronizing pulse located at a rearmost portion of said frame or field corresponding to said each block;

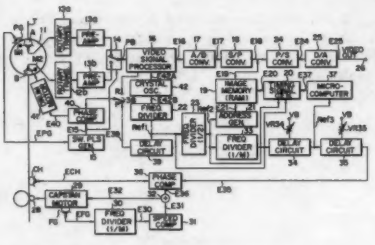
means for adding at least one of said blocks of said modulated digital data signal to said modulated television picture signal, said at least one block beginning after a lapse of predetermined time from the detection of said first vertical synchronizing pulse; and

means for recording the added signals onto said video disk.

4,800,447
SLOW-PLAYBACK FOR HELICAL SCANNING TYPE VCR-VTR

Akira Toba, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 24, 1986, Ser. No. 911,094
Claims priority, application Japan, Sep. 27, 1985, 60-212130
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—10.3 **21 Claims**



1. A special playback apparatus for a helical scan type VTR, comprising:

tape travel control means for controlling travelling of a video tape such that a control signal, representing a position of a video track on said video tape, has a predetermined phase difference from a frequency-divided reference signal obtained by 1/M (where M is a natural number of 2 or more) frequency-dividing a predetermined reference signal having a frame frequency;

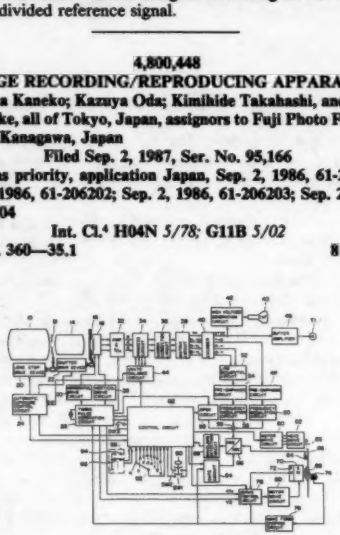
rotary head control means for controlling rotation of rotary heads for tracing the video track on said video tape, such that said rotary heads are rotated to have a prescribed phase difference with respect to the predetermined reference signal; and

memory means, having a memory capacity of at least one field of a video signal, for storing, at 2M fields interval, a one-field component of the video signal reproduced to the predetermined reference signal according to the frequency-divided reference signal.

4,800,448
IMAGE RECORDING/REPRODUCING APPARATUS

Kiyotaka Kaneko; Kazuya Oda; Kimihide Takahashi, and Izumi Miyake, all of Tokyo, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Sep. 2, 1987, Ser. No. 95,166
Claims priority, application Japan, Sep. 2, 1986, 61-206201; Sep. 2, 1986, 61-206202; Sep. 2, 1986, 61-206203; Sep. 2, 1986, 61-206204
Int. Cl.[4] H04N *5/78;* **G11B** *5/02*
U.S. Cl. 360—35.1 **8 Claims**



1. An image recording/reproducing apparatus for use with a magnetic recording medium such as a magnetic disc or the like, the magnetic recording medium being rotatively driven, and a magnetic head being shifted in a radial direction with respect to the magnetic recording medium to record onto the magnetic recording medium video signals obtained by photographing an object or to reproduce the video signal recorded on the magnetic recording medium, said image recording/reproducing apparatus, comprising:

photograph mode setting means for setting up photograph modes, said photograph modes including at least a sequential photograph mode;

reproduction mode setting means for setting up one of a plurality of reproduction modes, said reproduction modes including at least a sequential photograph reproducing mode for permitting reproduction to be performed at a reproduction speed corresponding to a sequential photograph speed;

recording means for recording said video signals together with various kinds of data signals onto said magnetic recording medium;

signal reproducing means for reproducing the signals recorded on said magnetic recording medium;

said signal reproducing means including,

magnetic head shift means for shifting said magnetic head in the radial direction of said magnetic recording medium;

memory means for storing photograph data, said photograph data including at least data representing said sequential photograph speed recorded on each of tracks provided on said magnetic recording medium; and

control means, responsive to an output of said photograph mode setting means or said reproduction mode setting means, for controlling said recording means such that data signals representing the photograph data including the number of frames to be photographed in one sequential photograph unit and the sequential photograph speed thereof are recorded onto said magnetic recording medium when said photograph mode is set to said sequential photograph mode;

said control means for searching said tracks, storing said photograph data recorded on said magnetic recording medium in said memory means, and reading out from said memory means at least said data representing said sequential photograph speed of said photograph data when reproduction is to be performed and said reproducing mode is set to the sequential photograph mode, thereby controlling said mangetic head shift means so that said magnetic head shift means performs its reproducing operation in accordance with said read-out data.

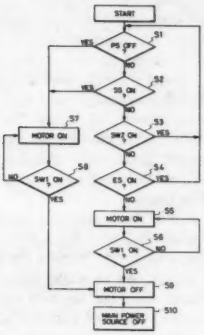
4,800,449
DAT RECORDER WITH AUTOMATIC CASSETTE MOVEMENT

Hidenori Yamasaki, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1987, Ser. No. 901
Claims priority, application Japan, Jan. 21, 1986, 61-11595
Int. Cl.[4] G11B *15/675*
U.S. Cl. 360—71 **4 Claims**

1. A rotary head type digital recording and reproducing device for use with a tape cassette (10) which is inserted thereinto through a slot (20) formed in said device and in which said cassette is selectively disposed in any one of an ejection position (i) where a lid (104) of said cassette is closed while a cover (40) of said slot is open, an unloaded position (ii) where both said cover and said lid are closed, and a loaded position (iii) where said lid is open to perform a recording or reproducing operation, comprising: detection means for detecting a termination of a recording or reproducing operation while said cassette is disposed in said loaded position and for producing an output signal in response thereto, and drive means respon-

sive to an output signal from said detection means for moving said cassette from said loaded position to said unloaded position to prevent dust from entering the cassette through the lid thereof.

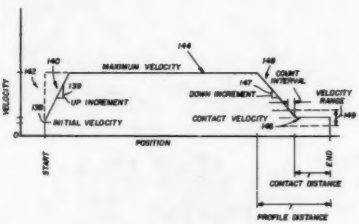


4,800,450

METHOD AND APPARATUS FOR CONTROLLING DEPLOYMENT OF A TAPE TRANSPORT MEMBER

David R. Rodal, Palo Alto, and Nathan W. Osborn, Menlo Park, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1986, Ser. No. 850,995
Int. Cl.[4] G11B *15/46, 15/48*
U.S. Cl. 360—73.06 **23 Claims**



1. A method for moving a tape-carrying member of a tape transport machine comprising the steps of:

moving the member at a first velocity along a selected path toward a preselected end position;

periodically sensing the position of the member relative to the preselected end position during said moving along the selected path;

determining if the sensed position of the member is within a first selected distance from the preselected end position;

said step of moving further including moving the member at a selected reduced velocity when the member is within the first selected distance from the preselected end position; and

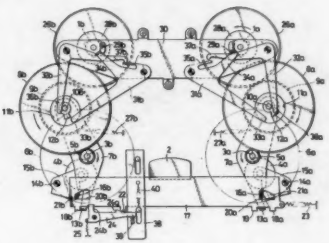
stopping movement of the member when a true end position is reached.

4,800,451

AUTOMATIC REVERSE MECHANISM FOR TAPE RECORDER

Shinsaku Tanaka, Setagaya, and Kunio Kido, Wako, both of Japan, assignors to Tanashin Denki Co., Ltd., Japan

Filed Sep. 29, 1987, Ser. No. 102,586
Claims priority, application Japan, Sep. 30, 1986, 61-150520[U]; Nov. 21, 1986, 61-179413[U]
Int. Cl.[4] G11B *15/18, 15/44*
U.S. Cl. 360—74.2 **19 Claims**



1. An automatic reverse mechanism for a tape recorder, in which capstans, pinch rollers and reel shafts are arranged symmetrically on both sides of an associated magnetic head, the capstans on both sides of the magnetic head and either one of said reel shafts are normally driven and rotated, the pinch roller on the same side as the rotating reel shaft is pressed against the corresponding capstan to cause the magnetic tape of a tape cassette inserted in the tape recorder to run in one direction, and when the magnetic tape has been fully wound up, the running direction of the magnetic tape is automatically changed over, comprising:

a rotation transmitting means having a pair of rotation transmitting members arranged symmetrically relative to the magnetic head, said rotation transmitting members being rotated normally under rotary forces of the corresponding capstans so as to transmit the rotary forces to the corresponding reel shafts via friction mechanisms respectively;

an eccentric circular cam surface provided eccentrically about a rotary shaft of at least one of the rotation transmitting members, and an engagement portion provided with said at least one rotation transmitting member;

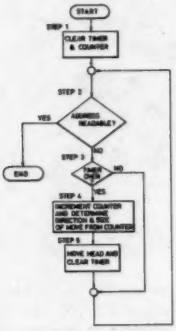
a reel-shaft stop detecting means for detecting each stop of at least one of the reel shafts, said means having a cam follower portion and a contact portion and adapted to receive a rotary force of said at least one reel shaft via a reel-stop detecting friction mechanism; said cam follower being maintained in sliding contact with the eccentric circular cam surface so as to avoid engagement between the contact portion and the engagement portion and when said at least one reel shaft stops, remaining at a position apart from the eccentric circular cam surface, whereby the contact portion is allowed to engage the engagement portion and at the same time said at least one rotation transmitting member is displaced from an engagement position to a non-engagement position relative to the corresponding reel shaft by a turning force developed in said at least one rotation transmitting member; and

a reversing means operable responsive to each displacement of said at least one rotation transmitting member to the non-engagement position so that the pinch roller associated with said at least one rotation transmitting member is separated from its corresponding capstan, the other pinch roller is brought into contact with the other rotation transmitting member, and the other rotation transmitting member is displaced to an engagement position relative to its corresponding reel shaft.

4,800,452
DISK RECORDING AND REPRODUCING HEAD SYSTEM HAVING TRACK SEEKING FOR FAULTY ADDRESSES

Tsuneo Ishii, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 20, 1986, Ser. No. 920,497
Claims priority, application Japan, Oct. 18, 1985, 60-159569
Int. Cl.[4] G11B *21/08*
U.S. Cl. 360—78.14 7 Claims



1. A disk recording and reproducing head system, comprising:

conversion means for playing back data from a disk;

driving means for driving said conversion means in a radial direction of said disk;

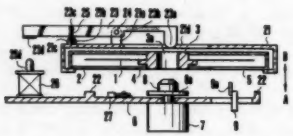
reading means for reading a plurality of address data recorded on said disk out of a signal produced by said conversion means; and

control means for controlling said driving means when said reading means is unable to read out any of said address data to cause said driving means to drive said conversion means in alternating inner and outer peripheral directions of said disk.

4,800,453
RECORDING AND/OR REPRODUCING APPARATUS ADAPTED FOR UTILIZATION OF RECORD BEARING MEDIA OF A DISC TYPE

Shigeki Okauchi, and Tsukasa Uehara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 663,963, Oct. 23, 1984, abandoned.
This application Jun. 22, 1987, Ser. No. 65,648
Claims priority, application Japan, Oct. 27, 1983, 58-201519
Int. Cl.[4] G11B *5/012, 17/04*
U.S. Cl. 360—99.02 21 Claims



1. A recording and/or reproducing apparatus using a disc-shaped record bearing medium, comprising:

(A) a recording and/or reproducing head;

(B) drive means for rotating the medium relative to said head;

(C) holder means movable between a first position for receiving the medium and a second position for placing the received medium at a predetermined position for signal recording and/or reproducing;

(D) detecting means for detecting that said holder means has reached said second position;

(E) pressing means arranged to apply no pressing action to press a portion of the medium against said drive means until said detecting means detects that the medium has reached said predetermined position and to apply the pressing action to press said portion of the medium against the drive means thereby to mount the medium on the drive means after said detecting means detects that the medium has reached said predetermined position and then to release said pressing action after a lapse of a predetermined period of time;

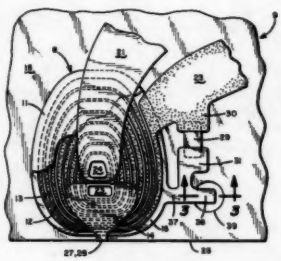
(F) instruction means for instructing said drive means to rotate the medium; and

(G) control means arranged to monitor the pressing action of said pressing means and to activate said drive means to rotate the medium when said pressing action by said pressing means has been released and said instruction means instructs said drive means to rotate the medium.

4,800,454
STATIC CHARGE PROTECTION FOR MAGNETIC THIN FILM DATA TRANSDUCERS

Edward L. Schwarz, Minneapolis, and Beat G. Keel, Prior Lake, both of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Aug. 10, 1987, Ser. No. 83,408
Int. Cl.[4] G11B *5/60, 5/30*
U.S. Cl. 360—103 9 Claims



1. In a thin film magnetic data transducer and conductive air bearing flyer assembly for use in a disk memory system, said transducer carried on an end surface of the flyer intersecting the air bearing surface, and separated from the flyer body by an insulating layer, a pole tip of a conductive magnetic core of said transducer being adjacent the flyer body at the intersection of the end and air bearing surfaces and separated therefrom by the insulating layer, and permitting electrostatic discharges between the pole tip and the flyer body, an improvement for preventing such discharges comprising:

a. an area of the insulating layer having an opening; and

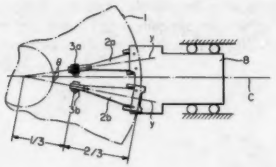
b. a conductor comprising an arm on the magnetic core projecting into the opening and making electrical contact with the flyer body thereat.

4,800,455

MAGNETIC DISK DRIVE HAVING A MAGNETIC-HEAD WITH A HEAD GAP SUPPORTED PARALLEL TO THE MOVING DIRECTION OF A MAGNETIC-HEAD POSITIONING MECHANISM

Toshimitsu Takizawa, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 6, 1986, Ser. No. 860,039
Claims priority, application Japan, May 7, 1985, 60-95576
Int. Cl.[4] G11B 5/48, 5/23
U.S. Cl. 360—104 2 Claims



1. A magnetic disk drive apparatus for aligning a magnetic head relative to a plurality of concentric annular tracks formed on a recording surface of a magnetic disk, said magnetic disk having a predetermined radius, comprising:

a magnetic head disposed on the distal end of a suspension arm having a longitudinal axis;

linear positioning means for moving said suspendion arm and magnetic head across said recording surfaces along a first axis parallel to said recording surface and coincident with the center of said disk, said suspension arm being fixedly connected to and extending from said positioning means such that said longitudinal axes of said suspension arm forms a first angle relative to said first axis;

said magnetic head having a slider section, said slider section having a surface disposed opposite to said recording surface and acting as a fluid bearing against said recording surface, and a head gap formed in said surface of said slider section;

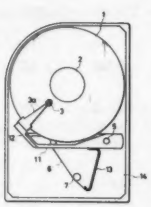
said head gap being inclined relative to said longitudinal axis of said suspension arm and parallel to said first axis along which said linear positioning means moves such that bit patterns recorded on adjacent tracks by said head gap are linearly continuous from the innermost tract to the outermost track of said magnetic disk.

4,800,456

MAGNETIC DISK DEVICE WITH COMPONENT MATERIALS HAVING IMPROVED SILICON CONTENT

Jiro Matsuyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1987, Ser. No. 126,374
Claims priority, application Japan, Nov. 28, 1986, 61-284643
Int. Cl.[4] G11B 5/56
U.S. Cl. 360—109 1 Claim



1. In a magnetic disk device of the type comprising a box-shaped base made of an aluminum alloy, a spindle motor attached to an upper plate of said base to rotate a magnetic disk through a hub, a swing arm made of an aluminum alloy and rotatably support at one end thereof on a pivot attached to the upper plate of said, a magnetic head supported at a tip of said swing arm so as to be positioned over a data track of said magnetic disk, a capstan rotated by a stepper motor attached to the upper plate of said base, and a band coupled to said capstan and to said swing so as to turn said swing arm through the rotation of said capstan, the improvement characterized in that:

said swing arm is made of an aluminum alloy whose silicon content is 16±1% weight; and

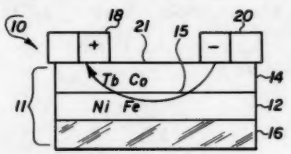
said base is made of a die-cast aluminum alloy whose silicon content is 7.5 to 9.5% by weight.

4,800,457

MAGNETORESISTIVE SENSOR ELEMENT

Mark Kryder, Bradford Woods; William C. Cain, West Mifflin, both of Pa., and William H. Meiklejohn, Scotia, N.Y., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Sep. 29, 1987, Ser. No. 102,426
Int. Cl.[4] G11B 5/39
U.S. Cl. 360—113 17 Claims



1. A magnetoresistive readback sensorelement comprising:

a first layer that has a high permeability, a uniaxial anisotropy, is magnetically soft and which exhibits a magnetoresistive response; and

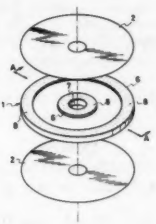
a second layer made of rare earth transition metal which provides a magnetic bias field to the first layer, said second layer contacting the first layer.

4,800,458

RECORDING SHEET BONDED TO A SUBSTRATE IN A MAGNETIC DISK

Tsutomu Okita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 24, 1986, Ser. No. 910,918
Claims priority, application Japan, Sep. 24, 1985, 60-144173[U]; Sep. 24, 1985, 60-144174[U]; Jan. 13, 1986, 61-2021[U]
Int. Cl.[4] G11B 5/82
U.S. Cl. 360—135 4 Claims



1. A recording disk, comprising:

a circular substrate having on each principal side a raised inner annular mounting ring and a raised outer annular

mounting ring, said mounting rings together defining a first recess formed on respective sides of said substrate;

two flexible sheets having a recording layer formed on one side thereof and adhesively bonded on another side thereof to bonding surfaces of said inner and outer mounting rings to thereby form respective gaps between respective ones of said flexible sheets and respective bottom surfaces of said first recesses;

each of said bonding surfaces of each of said mounting rings being formed with a plurality of second recesses extending into said mounting rings from each said bonding surface for receiving excess adhesive, said second recesses comprising a plurality of grooves extending radially with respect to a center of said circular substrate for receiving said excess adhesive, each of said grooves being in fluid communication with said gap and having a depth which increases progressively toward said gap.

4,800,459

CIRCUIT SUBSTRATE HAVING CERAMIC MULTILAYER STRUCTURE CONTAINING CHIP-LIKE ELECTRONIC COMPONENTS

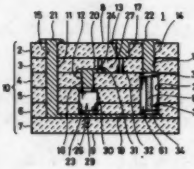
Horshi Takagi; Yoshiaki Mori, and Yukio Sakabe, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 12, 1987, Ser. No. 119,674

Claims priority, application Japan, Nov. 12, 1986, 61-269238; Jan. 7, 1987, 62-2428

Int. Cl.[4] H01G *4/10*; H05K *1/18*

U.S. Cl. 361—321 **14 Claims**



1. A circuit substrate comprising:

a ceramic laminated structure comprising a plurality ceramic layers including a first ceramic layer which defines a cavity, said laminated structure having first and second major surfaces opposite to each other;

a chip-like electronic component having external terminal electrodes and being received in said cavity; and

electrical connection means connected to said external terminal electrodes and having a portion extending from said first major surface and into said cavity which is in the interior of said ceramic laminated structure,

said external terminal electrodes being mainly composed of at least one metal selected from the group consisting of nickel, copper and palladium,

said electrical connection means being metal and mainly composed of copper; and

said electrical connection means including a conductive material member extending to said cavity along the interface between an adjacent pair of ceramic layers selected from said plurality of ceramic layers.

4,800,460

ELECTRICAL POWER PROTECTION TECHNIQUE

Simon Yin, Fremont, Calif., assignor to Square D Company, Palatine, Ill.

Filed Sep. 10, 1987, Ser. No. 95,346

Int. Cl.[4] H02B *1/04*

U.S. Cl. 361—340 **11 Claims**

1. An electrical power protection arrangement especially suitable for high voltage applications, comprising:

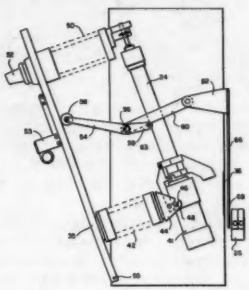
(A) an electrically insulated housing having a utility opening into its interior from outside the housing and a separate entry door mounted to the housing for movement between a closed position and an opened position;

(b) fuse means disposed within said housing;

(c) means adapted for connecting one side of said fuse means in electrical circuit with a load;

(d) means for electrically connecting and disconnecting the opposite side of said fuse means to a source of power through a cooperating terminal disposed outside said housing, said connecting and disconnecting means being movable between

(i) a first connecting position extending out through said utility opening from within said housing for electrically connecting said opposite side of said fuse means within the housing with said cooperating terminal outside the housing; and



(ii) a second disconnecting position entirely within said housing for electrically disconnecting said opposite side of said fuse means from said terminal; and

(e) first and second means for coupling the entry door of said housing with said connecting and disconnecting means such that

(i) opening the entry door causes said first coupling means to automatically move the connecting and disconnecting means to its disconnecting position while said second coupling means closes said utility opening whereby to disconnect the fuse means and physically shield it from said terminal; and

(ii) closing the entry door causes said second coupling means to automatically opens the utility opening while said first coupling means moves said connecting and disconnecting means to its connecting position through said opening.

4,800,461

MULTILAYER COMBINED RIGID AND FLEX PRINTED CIRCUITS

Herbert S. Dixon, Derry; Jonathan W. Weller, Amherst; Ivon Boyer, Merrimack, and Darryl J. McKenney, Milford, all of N.H., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 2, 1987, Ser. No. 115,751

Int. Cl.[4] H05K *1/00*; B44C *1/22*; C23F *1/02*; B05D *5/12*

U.S. Cl. 361—398 **13 Claims**

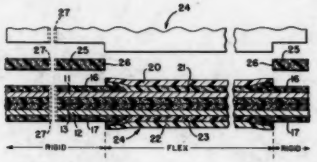
1. A process of fabricating a rigid flex printed circuit comprising the steps of laminating to an insulator layer on which has been imaged and etched conductor patterns

(a) a pair of first insulator layers impregnated with adhesive having cutout portions and

(b) insulator sheets covered on one side with an adhesive layer coextensive with the cutout portion and slightly overlapping at least one edge of the first insulator layers

to form a first printed circuit structure containing two conductor layers, cutting suitable flex cables in the cutout portion

area, stacking a plurality of the first printed circuit structures with second insulator layers impregnated with adhesive interposed between said first circuit structures, the second insulator layers having cutout sections generally coextensive with the insulator sheets, laminating the first printed circuit structures and the second insulator layers together to form a second printed circuit structure having rigid and flexible sections,



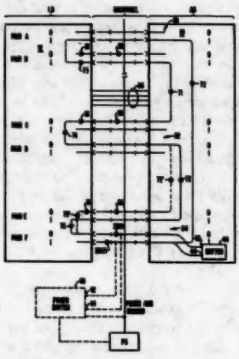
drilling holes in the rigid section of the second printed circuit structure, cleaning the holes, and plating through the holes to form conductive barrels connecting conductors in the conductor patterns of the conductor layers, whereby the second printed circuit structure is a rigid flex circuit having flexible cables cut from the areas coextensive with the cutout portions and extending from the rigid section.

4,800,462

ELECTRICAL KEYING FOR REPLACEABLE MODULES

A. Richard Zacher, Los Gatos; Jay A. Zwagerman, Saratoga, and Francis J. Dwan, Gilroy, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Apr. 17, 1987, Ser. No. 40,454
Int. Cl.[4] H01R 23/68
U.S. Cl. 361—413 **2 Claims**



1. In an electromechanical interconnect system of the type interconnecting a pair of modules via a backpanel, with the backpanel having an array of connectors disposed thereon, with each module having a module array of connectors mechanically compatible with the backpanel array, and with the backpanel for mechanically and electrically interconnecting the connectors on the pair of modules, with a first module in the pair selected from a first set of modules and second module in the pair selected from a second set of modules, with some of the modules in the first set being electrically incompatible with modules in the second set in the sense that damage to the electrically incompatible modules would result if the electrically incompatible modules were interconnected via the backpanel and a power supply control regulator circuit coupled to a pair of control regulator terminals were closed so that power was applied to the modules, a subsystem for assuring that power cannot be applied to a given pair of interconnected modules unless the first and second modules in the given pair are electrically compatible modules, said subsystem comprising:

a first set of keying connectors included in the array of connectors of the first module of the given pair of modules;

means for electrically connecting the pair of control regulator terminals to the connectors of a first selected pair of keying connectors in said first set, with a first control regulator terminal connected to a first keying connector and a second control regulator terminal connected to a second keying connector in said first selected pair of keying connectors;

means for connecting selected other pairs of keying connectors in said first set, with said connected pairs in said first set forming a first wiring pattern;

a second set of keying connectors included in the array of connectors of the second module of the given pair of modules;

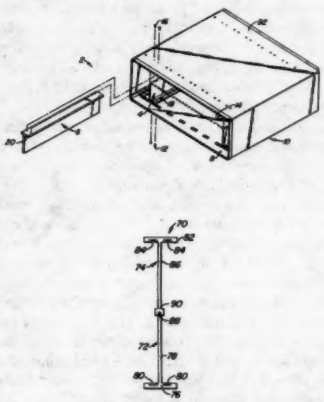
means for connecting selected pairs of keying connectors in the second set, with said connected pairs forming a second wiring pattern, with said first and second wiring patterns forming a closed circuit between the pair of control regulator terminals when the modules in the given pair are interconnected only if the modules in the given pair are electrically compatible thereby preventing power-up and possible resulting damage when a pair of electrically incompatible modules are inadvertently interconnected.

4,800,463

CIRCUIT BOARD BARRIER GUIDE

Joerg U. Ferchau, Morgan Hill, and Kenneth A. Kotyuk, San Jose, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Dec. 5, 1985, Ser. No. 805,510
Int. Cl.[4] H05K 9/00
U.S. Cl. 361—424 **6 Claims**



1. A circuit board barrier guide for mounting a circuit board, having first and second edges, in a housing comprising:

an elongate base including a first support groove for receipt of the first edge therein;

an elongate top having a second support groove facing a first support groove for receipt of the second edge therein; and

an elongate, planar barrier including first and second barrier portions, the base and the first barrier portion being a unitary extruded piece, the first and second barrier portions including respective first and second outer edges positioned adjacent one another and configured for complementary mating engagement with portions overlap-

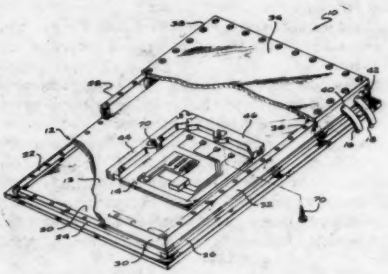
ping, the barrier spaced apart from the first and second grooves a chosen distance to form a channel between the barrier and a circuit board.

4,800,464

MODULAR SHIELDING ASSEMBLY FOR ELECTRONIC DEVICES

Mark D. Roos, San Carlos, and Walter J. Messmer, III, San Jose, both of Calif., assignors to EIP Microwave, Inc., San Jose, Calif.

Filed Feb. 5, 1988, Ser. No. 152,611
Int. Cl.[4] H05K 9/00
U.S. Cl. 361—424 **16 Claims**



10. A compartmentalized electromagnetic shielding assembly for electronic and microwave components comprising:

a housing defined by two opposing end plates connected by four peripheral side walls, each of said side walls being defined by two separate sections, said two opposing end plates and said side wall sections being comprised of an electromagnetic shielding material;

a ground plane platform formed with two opposing surfaces which is dimensioned to be fitted an releasably secured between said sections defining each of said side walls of said housing to subdivide said housing into two separate compartments, a first of said surfaces having disposed thereon a layer of conductive material to define a ground plane electromagnetically isolating said two compartments from each other, a second of said surfaces being formed with electronic circuitry disposed thereon;

one or more microwave components being secured to said ground plane platform first surfaces;

electronic coupling means formed through said ground plane platform to allow electronic coupling of each of said microwave components to said electronic circuitry, said coupling means formed to maintain the electromagnetic isolation between said two housing compartments;

a plurality of interlinkable framing members formed from a conductive material which are selectively assembled about each of said microwave components affixed to said first surface of said ground plane platform, said members being affixed to said first surface and dimensioned to abut up against the adjacent end wall of said housing, whereby said frame members surround and electromagnetically isolated each of said microwave components affixed to said first surface; and

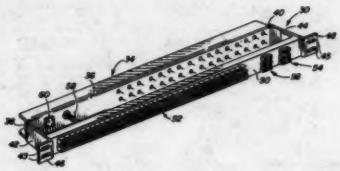
first and second cable connecting means mounted in selected ones of said housing walls, said first cable connecting means being coupled to said electronic circuitry to deliver or receive electronic signals therefrom, with said second cable connecting means being coupled to said microwave components to deliver microwave energy to or receive microwave energy therefrom, each of said first and second cable connecting means being formed with an exteriorly disposed coupling joint to which an electronic or microwave cable can be attached.

4,800,465

FUSE PANEL MOUNTING PLATE

E. Walter Rodgers, 5650 W. Marconi, Glendale, Ariz. 85036, and Lenual E. Rodgers, Jr., 1434 W. Pershing, Phoenix, Ariz. 85029

Filed Jul. 31, 1987, Ser. No. 80,446
Int. Cl.[4] H02B 1/18
U.S. Cl. 361—432 **11 Claims**



1. A mounting plate for supporting one or more fuse blocks to an electrical equipment bay frame, said mounting plate comprising in combination:

a. an elongated support member having a substantially planar surface and having first and second ends;

b. first and second mounting arms extending from the first and second ends, respectively, of said elongated support member for securing said elongated support member to opposing vertically-oriented standards of an electrical equipment bay frame;

c. said elongated support member including:

i. a plurality of spaced terminal-receiving holes formed in the substantially planar surface of said elongated support member for permitting wiring terminals of a fuse block supported by said mounting plate to extend therethrough, said plurality of terminal-receiving holes being arranged in pairs, each pair of terminal-receiving holes being centered upon a line lying perpendicular to a longitudinal axis of said elongated support member, a first hole in each said pair being centered on a first line lying parallel to the longitudinal axis of said elongated support member, and a second hole in each said pair being centered on a second line lying parallel to the longitudinal axis of said support member, said pairs of terminal-receiving holes being spaced apart at equal intervals, the distance of each such interval corresponding to the distance between the wiring terminals extending from the fuse blocks to be supported by said mounting plate, said plurality of terminal-receiving holes including at least 8 such pairs of terminal-receiving holes;

ii. a plurality of spaced screw-receiving holes formed in the substantially planar surface of said elongated member and adapted to receive mounting screws for securing a fuse block to said mounting plate, said plurality of screw-receiving holes being centered upon a line lying parallel to the longitudinal axis of said elongated support member and substantially midway between the first and second holes in each said pair of said plurality of terminal-receiving holes, said plurality of screw-receiving holes including mounting screw receiving holes lying substantially midway between at least a first and second pair, a third and fourth pair, the fourth and a fifth pair, the fifth and a sixth pair, and a seventh and eighth pair of said plurality of terminal-receiving holes; and

iii. a plurality of ground bar apertures formed in the substantially planar surface of said elongated support member and adapted to receive a ground bus bar extending from a fuse block, each of said ground bar apertures lying substantially between the first and second holes of one of said pairs of terminal-receiving holes, said plurality of ground bar apertures including at least a first ground bar aperture formed proximate the fourth pair

of terminal-receiving holes on a first side of and adjacent to the screw-receiving hole lying between said fourth and fifth pairs of terminal-receiving holes, and including at least a second ground bar aperture formed proximate the fifth pair of terminal-receiving holes on a second side of and adjacent to the screw-receiving hole lying between said fourth and fifth pairs of terminal-receiving holes.

4,800,466

ILLUMINATION DEVICE FOR A FRONT PANEL

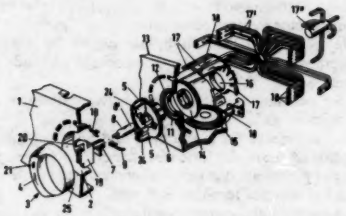
Karl-Heinz Bauer; Gerold Eckert, and Rüdiger Maidhof, all of Bad Neustadt/Saale, Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Continuation of Ser. No. 916,518, Oct. 8, 1986, abandoned. This application May 3, 1988, Ser. No. 191,758

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1985, 3535881

Int. Cl.[4] G01D *11/28*

U.S. Cl. 362—26 **20 Claims**



1. A front panel and means for illuminating said panel comprising a lamp, light guides placed behind said front panel, said light guides extending at least to said front panel for illuminating said front panel, a connection base for holding said lamp, an adjusting member for rotatable control, and means for conducting electrical power to said lamp, characterized in that said adjusting member for rotatable control further cmprises a rotary knob, a cover member removably attached to said rotary knob, said connection base removably attached to said rotary knob in a latching fit, wherein said connection base is placed behind said cover member such that said lamp projects behind said front panel and towards said light guides, said light guides communicating light projected by said lamp to said front panel.

4,800,467

DIMMED HEADLIGHT, PARTICULARLY FOR MOTOR VEHICLES

Gerhard Lindae, Leonberg; Richard Loewe, Gerlingen, and Peter Perthus, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

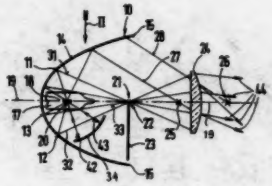
Filed Jun. 4, 1987, Ser. No. 58,351

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620789

Int. Cl.[4] B60Q *1/00*

U.S. Cl. 362—61 **3 Claims**

1. A dimmed headlight for motor vehicles, comprising a reflector whose vertical center section delimits a partial ellipse having an apex portion defining an optical axis, an inner focal point and an outer focal point located in said optical axis, said apex portion transiting into an upper elliptical portion and a lower elliptical portion, said upper and lower elliptical portions having an inner focal point coinciding with said inner focal point of the apex portion, said upper elliptical portion being shaped such as to provide a plurality of outer focal points located on said optical axis behind said outer focal point of the apex portion when viewed in the direction of reflected light rays; a light source arranged in the region of said inner focal points; an objective arranged on said optical axis between said outer focal point of the apex portion and an outermost focal point of the upper elliptical portion to collect light rays reflected by said apex portion and the said upper elliptical portion; a diaphragm provided in a lower part of said reflector in



the region below said outer focal point of the apex portion and extending transversely to said optical axis to block-off light rays propagating in said lower part of the reflector; and a light reflecting member provided within said lower part of the reflector before said diaphragm to reflect downwardly directed rays from said light source against a part of said apex portion situated above said optical axis.

4,800,468

HEADLAMP FOR VEHICLE

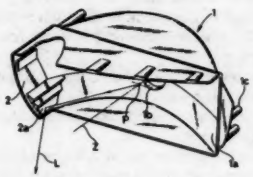
Sakae Yokoyama, Kawasaki, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1987, Ser. No. 123,761

Claims priority, application Japan, Nov. 29, 1986, 61-184088[U]

Int. Cl.[4] F21V *7/09*

U.S. Cl. 362—61 **7 Claims**



1. A vehicle headlamp, comprising

a main reflector formed of molded synthetic resin, said main reflector being arranged to reflect light from a light source in a main beam in a direction along an optical axis of said main reflector;

a rim portion integrally formed with said main reflector during molding of said main reflector, said rim portion extending forwardly of said main reflector substantially in the direction of said optical axis of said main reflector to form an integral carrier portion extending forwardly of said main reflector in said direction of said optical axis; and

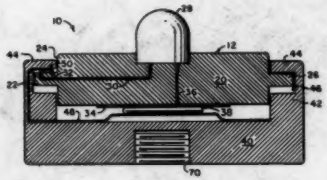
at least a portion of said extending carrier portion having at least one sub-reflecting surface integrally formed thereon by molding during said molding of said main reflector and carrier portion, said at least one sub-reflecting surface extending substantially linearly lengthwise along said optical axis direction for permitting easy removal of said reflector from a mold during said molding, and for reflecting light impinging on said at least one sub-reflecting surface in a direction other than the direction of said optical axis.

4,800,469

WHEEL MOUNTED SAFETY LIGHT

Thomas B. Leon, 4028 Norton Ave., Oakland, Calif. 94602

Filed Nov. 23, 1987, Ser. No. 124,551
Int. Cl.[4] B60Q 1/26
U.S. Cl. 362—72 2 Claims



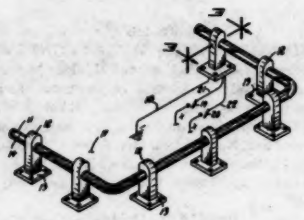
1. A safety warning light comprising
a power source,
a light source,
means for connecting said light source to said power source comprising
means defining a generally circular bottom housing having a bottom electrical conductor disposed along the inner surface thereof,
means defining a generally circular top housing having a top electrical conductor extending from proximate center thereof to proximate the outer edge thereof,
said generally circular top housing disposed generally parallel to said bottom housing and having its center coaxial with the center of said bottom housing,
means for electrically connecting one side of said light source to said top electrical conductor,
means for electrically connecting one side of said power source to said bottom electrical conductor,
means for electrically connecting the other side of said light source to the other side of said power source, said means comprising
a bottom electrical contact electrically connected to said bottom electrical conductor,
a top electrical contact electrically connected to said top electrical conductor,
said top electrical contact adapted to be electrically connected to said bottom electrical contact when said top housing is rotated to a particular position relative to said bottom housing, and
said top housing further comprises
a first tab integral with said top housing projecting radially from the peripheral edge of said top housing,
a second tab integral with said top housing projecting radially from the peripheral edge of said top housing approximately 180 degrees from said first tab,
said first tab adapted to have said top electrical contact attached thereto, and
said bottom housing further comprises
a rim integral with said bottom housing projecting upwardly about the periphery of said bottom housing nd adapted to receive said top housing,
a lip about the periphery of said bottom housing, integral with said rim, adapted to receive and engage said first and second tabs, one end of said bottom conductor being attached to the underside of said lip to define said bottom electrical contact and adapted to electrically engage said top electrical contact, and
means for biasing said top housing upwardly from said bottom housing to cause said tabs to frictionally engage the underside of said lip.

4,800,470

ILLUMINATED CARGO RACK

Robert E. Hartsaw, F-4 DonLee P.O. Box 3286, Oxford, Ala. 36203

Filed Sep. 8, 1987, Ser. No. 93,965
Int. Cl.[4] B60Q 1/00
U.S. Cl. 362—73 4 Claims



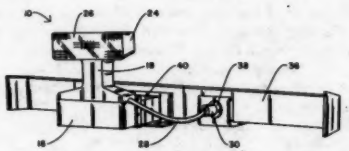
1. An illuminated cargo rack for securement and illumination of cargo positionable therein for attachment to an exterior surface of a motor vehicle comprising,
a single elongate, tabular light bar means for defining a securement perimeter for positioning of said cargo therein, and
means for positioning said light bar a spaced distance above said surface, and
wherein said means for positioning said light bar include a plurality of vertically oriented stanchions securing said light bar proximate one terminal end and securable to said surface at another terminal end, and
first and second light sources positioned within said light bar and
switching means for selectively illuminating said first and second light sources within said light bar, and
said first and second light sources are positioned on either side of a longitudinal co-extensive reflective mirror within said light bar, and
wherein said co-extensive mirror is vertically oriented relative to said light bar, and
said light bar is completely formed of a transparent exterior surface.

4,800,471

BRAKE LIGHT ATTACHMENT

Raymond E. Lippert, Box 330 Oceanside Village, Surfside Beach, S.C. 29575

Filed Aug. 10, 1988, Ser. No. 230,364
Int. Cl.[4] B60Q 1/26, 1/44
U.S. Cl. 362—80 6 Claims



1. A brake light attachment for use with a trailer hitch, mounted on a vehicle, having an electrical plug connector having contacts for operating trailer brake lights and trailer turn signals and a tongue receiving socket for receiving a trailer tongue, said brake light attachment comprising:
shank means having a first end dimensioned for insertion into the trailer hitch tongue receiving socket;
retaining means for securing said shank means in the tongue receiving socket;

housing means attached to a second end of said shank means;

electrical light producing means in said housing means; and

connecting means for connecting said light producing means to the trailer hitch electrical plug connector.

4,800,472

BATTERY-POWERED LAMP

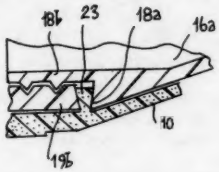
Colin R. Burton, Wolverhampton, and Philip Davies, London, both of United Kingdom, assignors to Ever Ready Limited, London, England

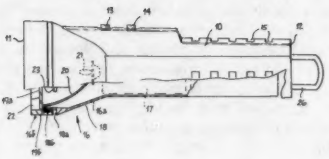
Filed Oct. 27, 1987, Ser. No. 114,160

Claims priority, application United Kingdom, Oct. 27, 1986, 8625647

Int. Cl.[4] F21L *9/00*; F21Y *31/02*

U.S. Cl. 362—158 **7 Claims**





1. A battery powered lamp including a two-part rigid casing comprising a hollow body and an end cap removably attached to the body, and a water-impermeable sock of flexible resilient material closed at one end and open at the other end and designed to fully enclose the body and partially enclose the end cap, the sock including an annular rib projecting inwardly of the sock at a position spaced from the open end thereof, the rib being wedge-shaped so that it thickens in the radially inward direction and being trapped between the body and its attached cap, the casing components that trap the rib in place, being shaped so that there is a force applied to the wedge-shaped rib, as the cap is fixed in place on the body, which is radially inwardly directed with respect to the casing, the portion of the sock between the rib and the open end thereof surrounding the cap and extending beyond the cap.

4,800,473

VENITIAN BLIND LAMP

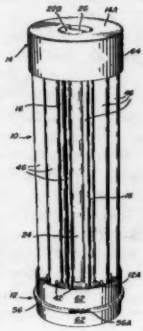
Denis Tremblay, P.O. Box 549, Succ. C, Montreal, Canada (H2L 4K4)

Filed Jul. 6, 1987, Ser. No. 69,976

Int. Cl.[4] F21V *17/02, 17/06*

U.S. Cl. 362—217 **14 Claims**

1. A lighting fixture comprising spaced first and second frames, a connector member spacedly rigidly interconnecting said frames, a light-emitting member extending between said frames, mounting means to secure said light-emitting member to said frames, a plurality of first pivot members mounted to said first frame and a plurality of second pivot members mounted to said second frame, each first pivot member coaxial with a corresponding one of the second pivot members, said pivot members at least partially spacedly surrounding said light-emitting member, a plurality of quadrangular louvers each supported at its ends by a pair of coaxial first and second pivot members; and actuating means, to incrementally pivot said louversd between an opened position, in which said louvers are substantially parallel, and a closed position, in which the side edge portions of adjacent louvers overlap one another so as to define a substantially opaque partition.



4,800,474

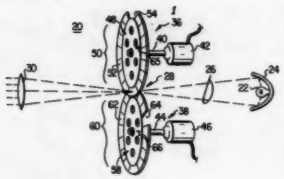
COLOR WHEEL ASSEMBLY FOR LIGHTING EQUIPMENT

James M. Bornhorst, Duncanville, Tex., assignor to Vari-Lite, Inc., Dallas, Tex.

Filed May 15, 1986, Ser. No. 863,440

Int. Cl.[4] F21V *9/00*

U.S. Cl. 362—293 **20 Claims**



1. A lighting instrument for producing a plurality of colors of light from a light source which produces a light beam, comprising:

a first rotatable color wheel comprising a first set of dichroic filters mounted about the periphery of a hub wherein each of said filters in said first set can be selectively positioned in said light beam by rotation of said first color wheel,

said first set of dichroic filters comprising long wave pass filters each of which transmits light having a wavelength greater than a cutoff wavelength of the filter, the cutoff wavelengths of said first set of filters spaced in the visible spectrum at respective intervals, said intervals being greater at longer wavelengths than at shorter wavelengths,

a second rotatable color wheel comprising a second set of dichoric filters mounted about the periphery of a hub wherein each of said filters in said second set can be selectively positioned in said light beam by rotation of said second color wheel, wherein said filters are positioned such that said light beam can pass sequentially through one filter in said first set and one filter in said second set, and

said second set of dichroic filters comprising short wave pass

filters each of which transmits light having a wavelength less than a cutoff wavelength of the filter, the cutoff wavelengths of said second set of filters spaced in the visible spectrum at respective intervals, said intervals being greater at shorter wavelengths than at longer wavelengths.

10. A color wheel for use in a lighting instrument for producing multiple colors of light, said lighting instrument generating a beam of light, comprising:

a hub rotatable about the axis thereof, said hub having a periphery, an annular ring shaped area being defined radially outward of the periphery, the beam of light passing through the annular ring at a first position, and

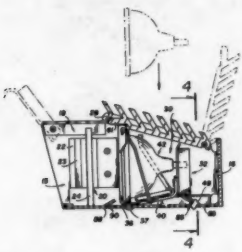
a set of planar dichroic filters, each filter joined along one edge thereof to the periphery of said hub and extending outward from said hub and across a predetermined arc of the annular ring shaped area, the predetermined arc for each filter being sufficient for the entire beam to pass through a given filter at the first position, each of a plurality of said filters is positioned contiguous to other filters in said set so that the beam is unimpeded by the hub as the hub rotates about the axis to place a filter at the first position.

4,800,475

PORTABLE ELECTRIC LIGHT

George N. Panagiotou, Encino, Calif., assignor to Cool Lux Lighting Industries, Inc., North Hollywood, Calif.

Filed Oct. 27, 1987, Ser. No. 113,715
Int. Cl.[4] F21V *29/00*
U.S. Cl. 362—294 20 Claims



1. In a portable lighting device having a bulb assembly mounted within a housing defined by a bottom wall with opposing sidewalls and a back wall extending across said sidewalls, said housing having an open front end and an open top overlaid by a cover means, wherein the improvement comprises:

an enlarged opening in said bottom wall beneath said bulb assembly covering at least one fourth of the area of said bottom wall which is beneath said bulb assembly, said opening having opposing side edges;

a guard flange extending into said opening having peripheral edges spaced-apart from said side edges to define passages for air flow to said bulb assembly;

an elongated slot in said bottom wall offset from said front end; and,

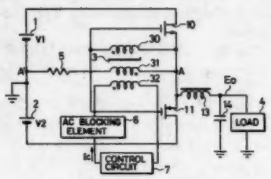
said cover means including a vent cover having air vent openings located at least above said enlarged opening and elongated slot.

4,800,476

PWM INVERTER WITH A SATURABLE CORE

Kousuke Harada, and Hiroshi Sakamoto, both of Fukuoka, Japan, assignors to Nishimu Electronics Industries Co., Inc., Fukuoka, Japan

Filed Sep. 10, 1987, Ser. No. 95,399
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—16 11 Claims



1. A PWM inverter having a saturable core, the inverter comprising:

a saturable magnetic material core wound with a main winding and a control winding,

a resistor connected to the main winding in series to form a main circuit,

a pair of semiconductor switch elements each with a control terminal means and each connected on one side thereof to one end of the main circuit and each also connected on the opposite side thereof to one of a pair of terminal means of which pair the first teminal means is adapted for connection to a first source of voltage and the second terminal means is adapted for connection to a second source of voltage, and with the main circuit also connected on the other end thereof to a third terminal means adapted for connection to a reference source of voltage,

a control circuit means which selectively supplies a selected control current to the control winding, and

a drive winding wound on the saturable magnetic material core and connected on one end thereof to one side of each semiconductor switch element and on the opposite end thereof to the control terminal of each, wherein the pair of semiconductor switch elements switched on and off alternately as a result of transient oscillation due to the inductance of the aforementioned drive winding after saturation of the saturable magnetic material core and to the capacitance between the control terminal and one side of the semiconductor switch elements so that a voltage results across the main circuit with its polarity inverted alternately which can be pulse-width-modulated by the control circuit current.

4,800,477

DIGITALLY CONTROLLED SWITCH-MODE POWER SUPPLY APPARATUS EMPLOYING QUANTIZED STORED DIGITAL CONTROL SIGNALS

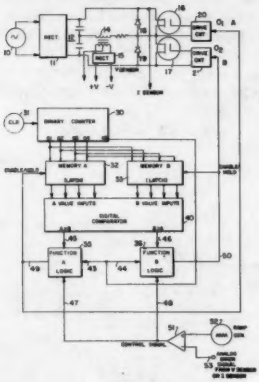
Anthony Esposito, 159 Connetquot Rd., Oakdale, N.Y. 11769

Filed Nov. 23, 1987, Ser. No. 124,076
Int. Cl.[4] H02M *3/337*
U.S. Cl. 363—17 14 Claims

1. In a switch-mode power supply circuit of the type employing a pulse width modulated (PWM) drive signal for providing an output frequency according to said drive signal which output frequency is applied to a drive transformer coupled to means for converting said drive signal to a DC output, the improvement therewith of apparatus for controlling said drive signal comprising:

means responsive to said drive signal for quantizing said signal to provide a digital indication of said drive signal; memory means for storing said digital indication of said drive signal indicative of a condition of said signal in a first

mode; means responsive to the next drive signal as applied to said circuit for controlling the same according to said



stored digital value to assure that said next drive signal is conditioned always according to said stored value.

4,800,478

METHOD AND APPARATUS FOR CONTROLLING PWM INVERTER

Isao Takahashi, Nagaoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

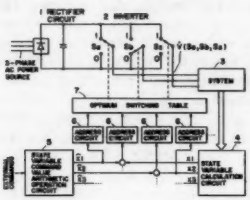
PCT No. PCT/JP85/00492, § 371 Date Oct. 31, 1986, § 102(e) Date Oct. 31, 1986

PCT Filed Sep. 3, 1985, Ser. No. 932,739

Claims priority, application Japan, Mar. 1, 1985, 60-41467

Int. Cl.[4] H02M *7/527*; H02P *7/63*

U.S. Cl. 363—41 **6 Claims**



1. A control method for a PWM inverter having branches containing switching means, said method comprising the steps of:

obtaining first digital signals of two or more state variables which represent whole combination states of said PWM inverter and load systems connected to an AC side of said PWM inverter and second digital signals of two or more deviations of said state variables from corresponding command values;

defining an evaluation function having as variables said state variables and said deviations;

inputting a set of said first and second digital signals to a memory as addresses; and,

deriving data from said memory for switching said switching means of the branches of said inverter so that a value of the evaluation function is minimized.

4,800,479

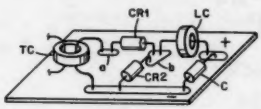
HIGH FREQUENCY POWER CONVERTER HAVING COMPACT OUTPUT TRANSFORMER, RECTIFIER AND CHOKE

James H. Bupp, Hudson, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Mar. 31, 1988, Ser. No. 175,098

Int. Cl.[4] H02M *7/06*

U.S. Cl. 363—48 **24 Claims**



1. A high frequency power converter system comprising;

an input transformer means comprised of a magnetic circuit element having a through hole,

at least one unilateral conducting device having opposed terminals and disposed extending at least in part through the magnetic circuit element through hole,

bussbar means comprised of a pair of bus conductors having said unitateral conducting device terminals connected therebetween,

and inductance means comprised of a magnetic circuit member associated with one of said bus conductors.

4,800,480

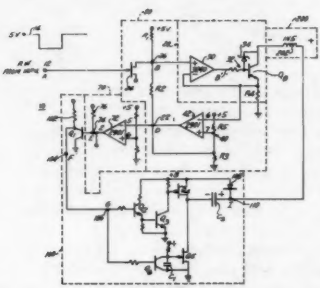
VOLTAGE DOUBLER AND SYSTEM THEREFOR

Douglas R. Verner, Sterling Heights, Mich., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Oct. 30, 1987, Ser. No. 115,218

Int. Cl.[4] H02M *7/25*

U.S. Cl. 363—60 **28 Claims**



1. A device for energizing at least one coil comprising:

voltage doubler circuit connected to a voltage source and including a charge storage capacitor, means operative during a first mode for causing the storage capacitor to charge to substantially the voltage level of the voltage source and means operative during a second mode for connecting the voltage source and storage capacitor in series.

first means in circuit with a coil and the voltage doubler circuit for: selectively completing a current path through the coil to enable and disable current flow therethrough in response to an input control signal, and for regulating the magnitude of the current flowing through the coil to a hold or steady state level;

second means responsive to the input control signal and the magnitude of current in the coil for generating a first control signal, the first control signal characterized that

during intervals prior to the input control signal such first control signal is maintained in a first state sufficient to cause the voltage doubler circuit to be in its first mode, and during intervals subsequent to the input control signal such first control signal is maintained in a second state sufficient to cause the voltage doubler circuit to be in its second mode, and

the second means including means for returning the first control signal to its first state after the level of current has reached a predetermined peak level to thereby reset the voltage doubler circuit to its first mode.

4,800,481

STATIC CONVERTER CIRCUIT AND METHOD FOR CONTROLLING IT

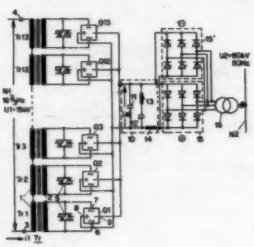
Berislav Knaffl, Wettingen; Peter Knapp, Oberehrendingen; Alfred-Christophe Rufer, Lauffohr; Urs Zürcher, Turgi, all of Switzerland, and Birger Gotaas, Skedsmokorset, Norway, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 17, 1987, Ser. No. 74,621

Claims priority, application Switzerland, Aug. 1, 1986, 3102/86

Int. Cl.[4] H02M 7/17

U.S. Cl. 363—70 **7 Claims**



1. A static converter circuit, comprising:

a voltage summing transformer;

said voltage summing transformer containing a predetermined number of part transformers;

each one of said part transformers containing a magnetic core which is magnetically decoupled from the magnetic cores of the remaining ones of said predetermined number of part transformers;

a predetermined number of static converters;

each one of said part transformers containing at least one power-system-side winding and at least one static-converter-side winding;

said at least one power-system-side windings of said predetermined number of part transformers being series-connected;

an alternating power system;

said series-connected power-system-side windings of said predetermined number of part transformers being operatively connected to said alternating power system;

said at least one static-converter-side winding of each one of said predetermined number of part transformers being connected to a respective one of said predetermined number of static converters; and

at leat one electric valve connected in parallel with said at least one static-converter-side winding of each one of said predetermined number of part transformers between said at least one static-converter-side winding and an associated one of said predetermined number of static converters.

4,800,482

SEQUENCE CONTROLLER USING PULSE COUNTS TO ACTIVATE/DEACTIVATE CONTROLLED ELEMENTS

Masao Hosaka, Sagamihara; Yoshitaka Ogino; Kazutoshi Shimada, both of Kawasaki, and Takashi Saito, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

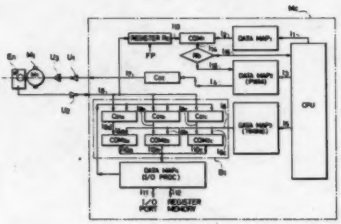
Continuation of Ser. No. 726,884, Apr. 24, 1985, abandoned.

This application Mar. 15, 1988, Ser. No. 170,074

Claims priority, application Japan, Apr. 27, 1984, 59-86597; Apr. 28, 1984, 59-86894

Int. Cl.[4] G03G 15/00

U.S. Cl. 364—140 **11 Claims**



1. A sequence control apparatus comprising:

a plurality of channel means, each channel means comprising count means for counting an input timing signal, and comparison means for comparing a count value from said count means and reference data;

data supply means for supplying the reference data for sequence control to said comparison means in said channel means;

designating means for designating the selection of a channel means among the plurality of said channel means in accordance with the number of objects to be processed in parallel; and

output means for outputting control signals to controlled elements in accordance with the comparison result of said comparison means.

8. A sequence control apparatus comprising:

count means for counting an input timing signal;

comparison means for receiving reference data for sequence control and for comparing a counted value received from said count means and the reference data;

data supply means for supplying the reference data for sequence control to said comparison means, said data supplying means comprising memory means containing a plurality of reference data, wherein said supplying means moves said plurality of reference data sequentially in a ring-form in accordance with the comparison result of said comparison means; and

output means for outputting a control signal to controlled elements in accordance with the comparison result of the comparison means.

4,800,483

METHOD AND SYSTEM FOR CONCURRENT DATA TRANSFER DISK CACHE SYSTEM

Akira Yamamoto, Yokohama; Toru Nishigaki, Sagamihara; Akira Kurano, Odawara; Kiyoshi Hisano, Odawara, and Yoshiro Shiroyanagi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 556,412, Nov. 30, 1983, abandoned.

This application May 28, 1987, Ser. No. 56,355

Claims priority, application Japan, Dec. 1, 1982, 57-209420

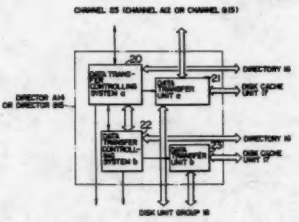
Int. Cl.[4] G06F 13/00

U.S. Cl. 364—200 **18 Claims**

1. In an information processing system including a disk cache unit; a disk unit; a processing unit; a channel for transferring data relating to input/output processing of said processing

unit; and a director connected to said channel, said disk unit, and said disk cache unit; the improvement in which said director comprises:

first data transfer means connected to said channel and said disk cache unit by way of first and second transmission lines, respectively, for transferring data between said channel and said disk cache unit; and



second data transfer means connected to said disk cache unit and said disk unit by way of a third and fourth transmission lines, respectively, for transferring data between said disk cache unit and said disk unit when data is being transferred between said channel and said disk cache unit by said first data transfer means, thereby to transfer the data in parallel between said channel and said disk cache unit and between said disk cache unit and said disk unit.

4,800,484

COMPUTING INSTALLATION WITH AUTOMATIC TERMINAL SWITCHING AND A TERMINAL ADAPTED TO SUCH SWITCHING

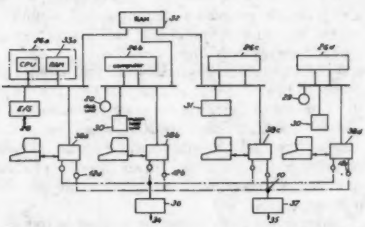
Dominique Baize, Lagnieu; Maurice Cleand, Pont de Cheruy, and Serge Minard, Lagnieu, all of France, assignors to Electricite de France, Paris, France

Filed Jun. 21, 1984, Ser. No. 623,214

Claims priority, application France, Jun. 21, 1983, 83 10247

Int. Cl.[4] G06F *13/14*

U.S. Cl. 364—200 **2 Claims**



1. A computer system comprising:

two digital computers each having means for sending an access request to a terminal unit from an output terminal when required for operation of the computer and having a receipt terminal for reception by said computer of a "ready" signal from the terminal unit indicating that access to said terminal unit is granted;

at least one terminal unit suitable for operation in co-operation with any one of said digital computers;

and connection means responsive to an access request from any one of said computers for providing a connection between said computer which sent the access request and said terminal unit while preventing access to said terminal unit by the other computers and providing an access priority to a first one of said computers with respect to the other computer;

said connecting means including: a switching circuit having a first condition providing connection of the first computer to said terminal unit and a second condition providing connection of the second computer to said terminal unit, said switching circuit being arranged to remain in the second condition until it receives an access request from said first computer and including a first circuit and a second circuit, said first and second circuits being respectively connected to said first and second computers so as to receive respective access requests therefrom so that each of said first and second circuits is responsive to access requests by the respective computer connected thereto, said switching circuit further comprising switching means including inputs connected to said first and second circuits for receiving control signals therefrom, and being arranged for overriding the control signal from said first circuit and for switching said switching circuit to said first condition responsive to the occurrence of a signal representing a predetermined condition of said terminal unit delivered by said terminal unit and an access request directed to said first circuit by said first computer.

4,800,485

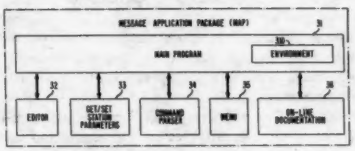
ON-LINE DOCUMENTATION FACILITY

John M. Ackroff, Highland Park, N.J.; Michael J. Heffler, New York City, N.Y., and John C. Mitchell, Middletown, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 383,578, Jun. 1, 1982. This application Jun. 16, 1986, Ser. No. 875,246

Int. Cl.[4] G06F *3/02*

U.S. Cl. 364—200 **9 Claims**



1. A method performed by an on-line documentation program executing in a computer system, said method comprising the steps of

maintaining in a file within said computer system particular predefined system on-line documentation associated with a particular on-line documentation command,

receiving from at least one user of said system user-specific on-line documentation associated with said particular on-line documentation command, said at least one user being other than a designer of said computer system,

retrieving from said file and providing to each other individual user of said system, in response to each issuance by said each other user of said particular on-line documentation command, said particular predefined system on-line documentation associated with said particular on-line documentation command, and

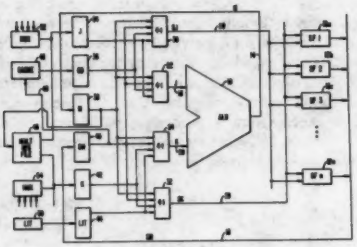
providing to said at least one user of said system, in response to each issuance by said at least one user of said particular on-line documentation command, said user-specific on-line documentation, said user-specific on-line documentation being different from said system on-line documentation.

4,800,486

MULTIPLE DATA PATCH CPU ARCHITECTURE

Robert W. Horst, Cupertino; Shannon J. Lynch, Los Gatos; Cirillo L. Costantino, Castro Valley, and John M. Beirne, Los Gatos, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 29, 1983, Ser. No. 537,877
Int. Cl.[4] G06F 9/28
U.S. Cl. 364—200 15 Claims



4. A CPU architecture for use in a data processing system wherein an instruction causes operands to be processed during execution of a microcode word having at least first, second, third, fourth, and fifth microcode fields, including:

arithmetic logic means in a first data path for performing arithmetic logic operations on operands as specified by the first microcode field,

at least one selectable function means in a second data path for performing operations on operands simultaneously with the arithmetic logic operations as specified by the second microcode field,

a plurality of first register means for holding operands for processing by said arithmetic logic means and said function means,

a plurality of first select logic means, responsive to the third microcode field, for selectively connecting one of said first register means to said arithmetic logic means and one of said first register means to said function means,

first return bus means for returning results from an operation of said arithmetic logic means to at least one of said first register means,

second return bus means for returning results from an operation of said arithmetic logic means to at least one of said first register means,

second return bus means for returning results from an operation of said function means to at least one of said first register means,

at least one second register means connected to at least one of said first register means for holding operands for processing by said arithmetic logic means and said function means and selectively supplying said operands to said first register means in response to the fourth microcode field, and

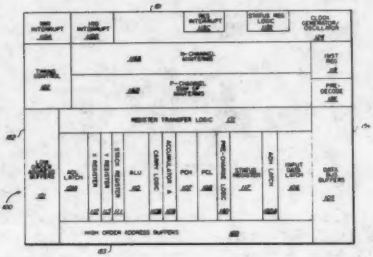
at least one second select logic means connected to at least one of said first register means for selectively connecting one of a plurality of data sources to said first register means in response to the fifth microcode field.

4,800,487

TOPOGRAPHY OF INTEGRATED CIRCUIT INCLUDING A MICROPROCESSOR

William D. Mensch, Jr., 1924 E. Hope St., Mesa, Ariz. 85203

Continuation of Ser. No. 534,181, Sep. 20, 1983, Pat. No. 4,652,992. This application Mar. 23, 1987, Ser. No. 29,272
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] G06Z 1/00
U.S. Cl. 364—200 2 Claims



1. An integrated circuit chip including a microprocessor having a surface, said microprocessor comprising in combination:

(a) data bus means on said surface for transferring digital data;

(b) address bus means on said surface for transferring digital address information;

(c) register circuit means on said surface coupled to said data bus means and said address bus means for storing digital information received from said data bus means and said address bus means and transferring digital information to and from said data bus means and said address bus means in accordance with execution of program instructions by said microprocessor;

(d) address output buffer circuit means on said surface coupled to said address bus means for temporarily storing digital address information from said microprocessor;

(e) instruction decoding circuit means located above said register circuit means for decoding instructions to be executed by said microprocessor, said instruction decoding circuit means including

i. first read-only memory circuit means including a plurality of FETs arranged in an array for producing a plurality of minterm signals in response to instruction information in an instruction register on said surface,

ii. second read-only memory circuit means including a plurality of FETs arranged in an array for producing a plurality of sum-of-minterm signals in response to said minterm signals, and

iii. register transfer circuit means responsive to said sum-of-minterm signals for effectuating electrical coupling between registers in said register circuit means, said data bus means and said address bus means in accordance with the instruction being executed, in order to effect predetermined data transfers therebetween, said register transfer circuit means being disposed above said register circuit means, and second read-only memory circuit means being disposed above said register transfer circuit means, and said first read-only memory circuit means being disposed and above said second read-only memory circuit means, said data bus means and said address bus means extending horizontally through said register circuit means;

said FETs in said first read-only memory circuit means being arranged as vertical groups of series-coupled FETs, said minterm signals being coupled at the bottom of said first

read-only memory circuit means to a plurality of conductors, respectively, which are connected to gate electrodes of various ones of said FETs in said second read-only memory circuit means, said FETs in said second read-only memory circuit means being arranged as horizontal groups of parallel-coupled FETs on the drain electrodes of which said sum-of-minterm signals are produced;

(f) a first group of horizontal conductors connected, respectively, to various drains of said FETs of said second read-only memory circuit means, for each conducting a respective one of said sum-of-minterm signals; and

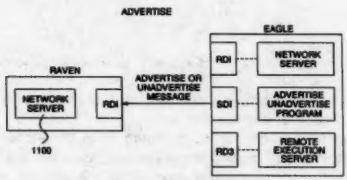
(g) a second group of horizontal conductors conducting said instruction information from said instruction register to various ones of said FETs of said first read-only memory circuit means.

4,800,488

METHOD OF PROPAGATING RESOURCE INFORMATION IN A COMPUTER NETWORK

Rakesh Agrawal, Chatham, and Ahmed K. Ezzat, New Providence, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1985, Ser. No. 796,864
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **17 Claims**



1. A method of propagating resource information among computers of a computer network, comprising the steps of

at each computer,

dynamically advertising the availability or unavailability of a resource at the computer to other computers of the network in response to the resource becoming available or unavailable, respectively, for use by the other computers,

soliciting the availability or unavailability of a resource at other computers of the network each time the computer is placed on-line in the network,

maintaining a database of the availability or unavailability of the resource at other computers of the network, and

verifying from the database that a resource at a specified computer is available from attempting to use the resource at the specified computer.

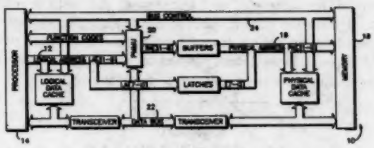
4,800,489

PAGED MEMORY MANAGEMENT UNIT CAPABLE OF SELECTIVELY SUPPORTING MULTIPLE ADDRESS SPACES

William C. Moyer; Michael W. Cruess, both of Austin; William M. Keshlear, Richmond, all of Tex., and John Zolnowsky, Milpitas, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 819,180, Jan. 15, 1986, Pat. No. 4,763,244.
This application May 19, 1988, Ser. No. 195,751
Int. Cl.[4] G06F *12/16*
U.S. Cl. 364—200 **4 Claims**

3. In a paged memory management unit (PMMU) adapted to selectively access a plurality of pointer tables and page tables stored in a memory to translate a selected logical address into a corresponding physical address by first combining a first portion of said logical address and a first table pointer to access a selected one of said pointer tables to obtain therefrom a page table pointer to a selected one of said page tables and then combining a second portion of said logical address and said page table pointer to access said selected page table to obtain therefrom said physical address, the improvement wherein said



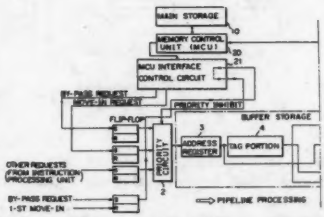
PMMU is selectively enabled to combine said first table pointer and said second portion of said logical address to directly access said page table to obtain therefrom said physical address.

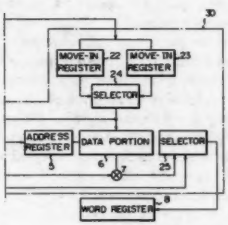
4,800,490

BUFFER STORAGE CONTROL SYSTEM HAVING A PRIORITY CIRCUIT

Tsutomu Tanaka, Yokohama, and Yuji Oinaga, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 29, 1986, Ser. No. 924,329
Claims priority, application Japan, Oct. 29, 1985, 60-241799
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—200 **6 Claims**





1. A buffer storage control system including a central processing unit and a main storage for storing data, comprising:

buffer storage means for storing a part of the data of the main storage; and

at least one of an arithmetic means and an instruction processing means, each for processing data;

means for transferring data to be processed directly to said one of said arithmetic means and said instruction processing means by a by-pass operation when a block transfer of data from the main storage means to the buffer storage is carried out;

means for writing said transferred data into said buffer storage means and when not all of the data of one block is

written into said buffer storage means, only the data written in said block transfer can be read; and

means for inhibiting access to said buffer storage means during a period from an end of the by-pass operation to an end of the writing of said transferred data into said buffer storage means with respect to data related to said by-pass operation and data transferred from said main storage subsequent to said data related to said by-pass operation, based upon a subsequent request for access.

4,800,491

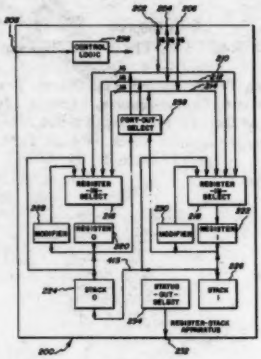
REGISTER-STACK APPARATUS

Robert M. Hardy, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 17, 1986, Ser. No. 931,314

Int. Cl.[4] G06F *12/00*; G11C *7/00*

U.S. Cl. 364—200 **23 Claims**



1. Apparatus, comprising:

first memory means for retrievably storing a plurality of binary bit signals;

second memory means for retrievably storing a plurality of binary bit signals such that a last signal stored therein is a first available signal for retrieval, said second memory means being coupled to receive for storage a content of said first memory means;

modifier means for providing the contents of said first memory means in a plurality of predetermined modified forms on a like plurality of modifier means outputs;

select means, responsive to an applied one of a plurality of possible control command signals, for applying to said first memory means selected binary bit signals for storage therein, said select means being coupled to receive said plurality of predetermined modified forms of said first memory means contents; and

output means for applying the contents of said first memory means to one of a plurality of ports for reading said first memory means contents external to said apparatus.

4,800,492

DATA LOGGER FOR A POST-MIX BEVERAGE DISPENSING SYSTEM

Donald A. Johnson, Duluth, Ga., and Dave Conklin, Corvallis, Oreg., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 13, 1987, Ser. No. 49,221

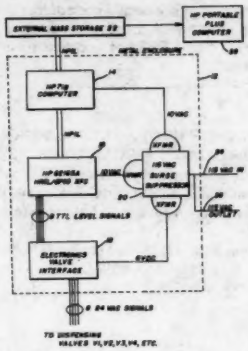
Int. Cl.[4] G06F *15/24*; B65B *3/04*

U.S. Cl. 364—403 **12 Claims**

1. In a beverage dispenser apparatus having a plurality of valve assemblies for dispensing respective flavors of beverages into containers of different sizes, a data logging system for sensing and storing information with respect to beverages dispensed from each respective valve assembly, the improvement comprising:

(a) means for sensing the opening and closing of each valve assembly, a beverage dispensing cycle beng initiated when a valve assembly is opened and terminated when a valve assembly is closed, said means for sensing generating data signals indicating the opening and closing of each valve assembly;

(b) controller means including,



1. clock means for continuously generating time of day signals, and

2. means for receiving and storing said data signals and said time of day signals; and

(c) processor means for determining from the stored data and time of day signals, the volume of beverage dispensed for each respective valve assembly for a selected period during a day or days.

4,800,493

ELECTRONIC CASH REGISTER

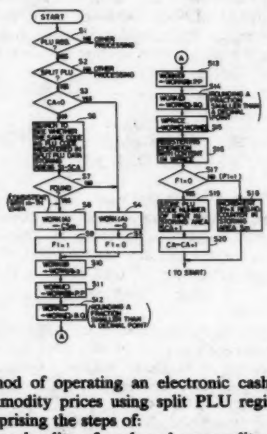
Hiroshi Takagi, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 8, 1985, Ser. No. 763,641

Claims priority, application Japan, Aug. 10, 1984, 59-169033

Int. Cl.[4] G06F *15/21*; G07G *1/00*

U.S. Cl. 364—405 **2 Claims**



1. A method of operating an electronic cash register to register commodity prices using split PLU registering, said method comprising the steps of:

a. storing a plurality of packaged commodity data words,

corresponding to a plurality of packaged commodities, in a memory having a plurality of PLU data storing memory areas, each of said packaged commodity data words including a commodity code, a total package price, and a commodity number indicating the number of individual commodities in each of said packaged commodities;

b. entering into said electronic cash register a commodity code for an individual commodity and a registering number indicating the quantity of said individual commodity to be registered;

c. determining if split PLU registering is applicable to said entered commodity code by locating matching package commodity data word in said plurality of package commodity data words, said matching package commodity data word comprising one of said plurality of data words in which the included commodity code is equivalent to said entered commodity code for an individual commodity;

d. determining if a count value (CA), indicative of whether split PLU registering has been performed previously, is zero if split FLU registering is applicable to said entered commodity code;

e. setting a total number registered value stored in a first memory area to zero and resetting a flag if said count value (CA) is equal to zero, and if said count value (CA) is not equal to zero, determining if said entered commodity code has previously been entered;

f. setting said total number registered value in said first memory are equal to a registering number counter value (CSm) indicative of the quantity of said individual commodity corresponding to said entered commodity code that has previously been entered and setting said flag if said entered commodity code has previously been entered, and setting said total number registered value in said first memory area equal to zero and resetting said flag if said entered commodity code has not been previously entered;

g. calculating with a processor unit a sum of said registering number and said total number registered value stored in said first memory area, and storing said sum in a second memory area;

h. calculating with said processor unit a first rounded result of the division of a product of said package price and said sum stored in said second memory area by the commodity number included in said matched packaged commodity data word and storing said first rounded result in a third memory area;

i. calculating with said processor unit a second rounded result of the division of a product of said sum stored in said first memory area and the package price included in said matched packaged commodity data word by said commodity number included in said matched packaged commodity data word, and storing said second rounded result in a fourth memory area; and

j. calculating with said processor unit a final result value based on the numerical difference between said first rounded result stored in said third memory area and said second rounded result stored in said fourth memory area and indicating on an indicator unit that an amount to be registered for said entered commodity code is said final result value.

4,800,494

METHOD AND APPARATUS FOR EXECUTION OF MULTISLICE IMAGING EXPERIMENTS

David L. Foxall, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 23, 1987, Ser. No. 29,284

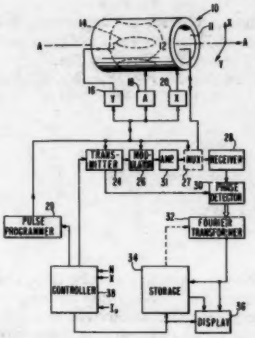
Int. Cl.[4] G06F *15/42*; G01R *33/22*

U.S. Cl. 364—413.13 **10 Claims**

1. An apparatus for sequentially applying selected excitation signals to selected slices of a physical object comprising:

means for associating the integer i with a corresponding slice denoted by S_i for $i=0, \ldots, (N-1)$, where N is a positive integer greater than 6;

means for calculating the least positive residue r_k satisfying $r_k \equiv I_0+kX(MOD\ N)$ for $k=0, \ldots, N-1$ where I_0 is a selected integer and X is an integer relatively prime to N satisfying $r(X)>2$ and $N-4(X)>2$, where r(X) is the least positive residue congruent to X modulo N; and



means, responsive to said residue r_k, for applying a selected excitation signal to slice S_{rk}, for $k=0, \ldots, (N-1)$ in the order $k=0, \ldots, N-1$ so that a selected excitation signal is applied to slice S_{rk} before being applied to slice $S_{r(k+1)}$ for $k=0, \ldots, (N-2)$.

4,800,495

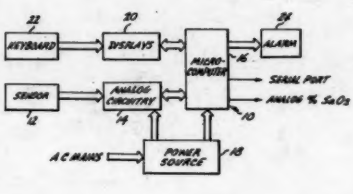
METHOD AND APPARATUS FOR PROCESSING SIGNALS USED IN OXIMETRY

Robert E. Smith, Edmonds, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Aug. 18, 1986, Ser. No. 897,750

Int. Cl.[4] G06F *15/42*

U.S. Cl. 364—413.03 **43 Claims**



1. An apparatus for processing a signal containing information about arterial blood flowing in tissue, said signal having a relatively periodic pulsatile component superimposed upon a varying baseline component, said apparatus comprising:

first portion identification means for identifying a first portion of said signal during which the sign of the slope of said signal changes from positive to negative;

positive peak location means for locating the point along said first portion of said signal having the largest amplitude, the point having said largest amplitude defining a positive peak of said signal;

second portion identification means for identifying a second portion of said signal during which the sign of the slope of said signal changes from negative to positive;

negative peak location means for locating the point along said second portion of said signal having the smallest amplitude, the point having said smallest amplitude defining a negative peak of said signal and the difference in

signal amplitude between said positive peak and said negative peak defining a pulse amplitude; and

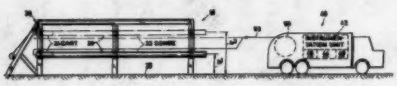
analyzing means, responsive to said positive and negative peak location means, for producing an output indicative of a characteristic of said arterial blood.

4,800,496

METHOD FOR DETERMINING INDUCTION SONDE ERROR

Thomas D. Barber; William B. Vandermeer, and William D. Flanagan, all of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 28, 1987, Ser. No. 101,616
Int. Cl.[4] G01V *3/18*
U.S. Cl. 364—422 **19 Claims**



1. A method for determining a sonde error characteristic of an induction logging tool comprising the steps of

measuring an electrical characteristic with said logging tool from at least two different heights above the earth, and

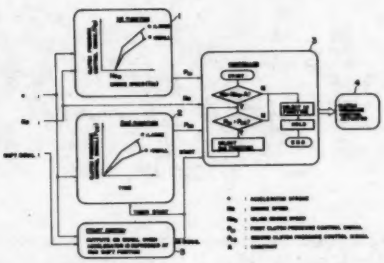
determining said sonde error characteristic as a function of a predetermined relationship between said sonde error characteristic and said measurements of said electrical characteristic at said different heights above the earth.

4,800,497

CLUTCH PRESSURE CONTROL APPARATUS

Yasuo Koori, Toyota, and Tsutomu Mitsui, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 28, 1986, Ser. No. 845,329
Claims priority, application Japan, Mar. 28, 1985, 60-62134
Int. Cl.[4] B60K *41/28*
U.S. Cl. 364—424.1 **12 Claims**



1. A clutch pressure control apparatus which comprises:

(a) a first function generator for generating a clutch pressure control signal in accordance with a first function such that a clutch pressure control signal P_{c1} is definitely determined as a function of an engine rotational speed signal and an acclerator pedal stroke signal;

(b) a controller including a second function generator for providing a second clutch pressure control signal P_{c2} in accordance with a second function such that when actual engine speed at an initial clutch engagement phase at which a clutch is entering a half-clutch state exceeds a predetermined engine speed limit, which does not provide shock when the clutch is engaged, said second clutch pressure control signal is first set to a temporary low value corresponding to an engine speed not exceeding the predetermined engine speed limit and then in accordance with said second function is allowed to approach a value determined by the first function according to the actual engine speed signal; and

(c) a start switch for detecting accelerator pedal stroke and transmission shift position and outputting a start signal to start to operate said controller when transmission is shifted to a running position and the accelerator stroke meets a condition for start,

wherein the second clutch pressure control signal P_{c2} increases as the time proceeds starting from said outputting of the start signal;

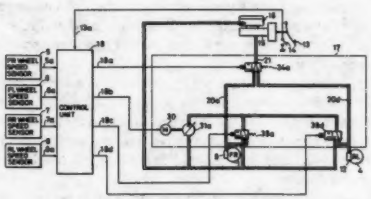
said controller receiving control signal P_{c1}, the accelerator pedal stroke signal, the start signal and the engine rotational speed and selecting the control signal P_{c2} when the engine speed signal is higher than the predetermined engine speed limit and P_{c1} is higher than P_{c2}, or selecting the control signal P_{c1} when the engine speed signal is not higher than the predetermined engine speed limit or P_{c1} is not higher than P_{c2} with the control signal P_{c1} being maintained until the start signal is outputted again.

4,800,498

ANTI-SKID CONTROL BASED ON DUTY CYCLE ADJUSTMENT

Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Yuuichi Imani, Hamamatsu; Akira Kuno, Oobu, and Yoshihisa Nomura, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 24, 1986, Ser. No. 877,729
Claims priority, application Japan, Jun. 26, 1985, 60-142091
Int. Cl.[4] B60T *8/34*
U.S. Cl. 364—426.02 **11 Claims**



9. An anti-skid control system incorporated in a hydraulic pressure braking apparatus of a vehicle at least including a master cylinder for developing a hydraulic pressure in response to the operation of a brake pedal and a wheel braking cylinder responsive to the hydraulic pressure developed by said master cylinder for braking a wheel of said vehicle, comprising:

means for detecting the speed of said wheel and generating a signal indicative of the detected wheel speed;

a first directional control valve switched to shut off the communication between said master cylinder and said wheel braking cylinder;

hydraulic pressure supplying means coupled to said wheel braking cylinder for supplying a hydraulic pressure thereto;

a second directional control valve provided between said hydraulic pressure supplying means and said wheel braking cylinder and actuated to shut off the communication therebetween; and

control means responsive to the signal from said wheel speed detecting means for:

(1) deriving a vehicle speed and a wheel acceleration from the detected wheel speed,

(2) determining a target wheel speed on the basis of the

derived vehicle speed and a predetermined slip ratio of said wheel,

(3) deriving a parameter as a function of the derived wheel acceleration and the difference between the determined target wheel speed and the detected wheel speed,

(4) comparing the derived parameter with a first predetermined value,

(5) switching said first directional control valve to the shut-off condition when the derived parameter exceeds the first predetermined value,

(6) determining a duty cycle in terms of the time of the actuation of said second directional control valve,

(7) comparing the derived parameter with a second predetermined value and reducing the duty cycle by a first correction value when the derived parameter is greater than said second predetermined value,

(8) comparing the derived parameter with a third predetermined value and enlarging the duty cycle by a second correction value when the derived parameter is smaller than said third predetermined value, and

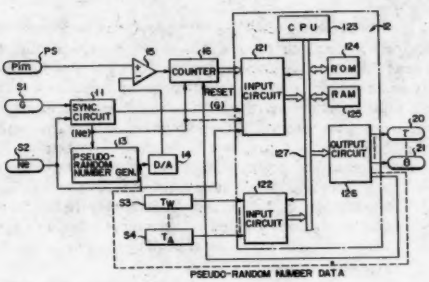
(9) controlling the switching of said second directional control valve in accordance with the reduced or enlarged duty cycle.

4,800,499

APPARATUS FOR PROCESSING ENGINE OPERATION DETECTION SIGNALS

Katsuhiro Ina, Okazaki; Susumu Akiyama, Kariya, and Yuzi Hirabayashi, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 23, 1986, Ser. No. 854,818
Claims priority, application Japan, Apr. 24, 1985, 60-86239
Int. Cl.[4] F02P 9/00; F02D 41/30
U.S. Cl. 364—431.03 **12 Claims**



1. An apparatus for processing signals from a device for detecting the operating state of an engine, comprising:

first signal generating means for generating a first signal in a first period in response to detection parameters of said device of a desired detection accuracy;

second signal generating means for generating a second signal in a second period which is longer than said first period;

pseudo random number generating means for generating random numbers in response to said first signal;

comparing means for comparing a detection signal level from said device for detecting the operating state of the engine and random number data generated by said pseudo random number generating means and providing an output signal;

counting means which is incremented by the output signal from said comparing means in response to said first signal; and

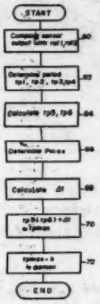
control means for outputting count data of said counting means based on said second signal and then resetting said counting means to an initial value.

4,800,500

METHOD OF DETECTING CYLINDER PRESSURE IN INTERNAL COMBUSTION ENGINE

Akira Tanaka, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 936,858
Claims priority, application Japan, Dec. 2, 1985, 60-271124
Int. Cl.[4] G01M 15/00; G01L 23/22
U.S. Cl. 364—431.08 **8 Claims**



1. A method of detecting cylinder pressure angle in an internal combustion engine, comprising the steps of:

(a) determining first and second reference values such that the first reference value is higher than the second reference value and the first reference value is lower in voltage than a potential largest output signal expected to be output from a cylinder pressure sensor;

(b) applying said first and second reference values and an output signal from said cylinder pressure sensor to a window comparator;

(c) measuring distances from a predetermined point to leading and trailing edges of first and second pulses generated from said window comparator, respectively;

(d) determining a first midpoint of the distance between the leading edge of the first pulse and the trailing edge of the second pulse and determining a second midpoint of the distance between the trailing edge of the first pulse and the leading edge of the second pulse of said window comparator;

(e) approximating a point of maximum pressure by determining an angle of slope between said first and second midpoints and applying said angle of slope to said pressure output signal to determine a largest value of said pressure sensor, representing a maximum cylinder pressure, of a current cycle;

(f) calculating a difference between the largest value and one of said first and second reference values;

(g) calculating an offset value of said approximated point of maximum pressure from one of said first and second midpoint values by multiplying the difference by said angle of slope;

(h) calculating a total distance between the predetermined point and the approximated point of maximum cylinder pressure by obtaining a sum of the offset value and said one of said midpoints; and

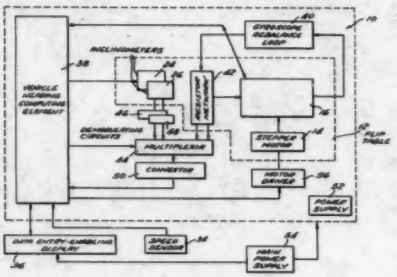
(i) using the sum as a position representing a maximum cylinder pressure angle of said internal combustion engine.

4,800,501

VEHICLE LAND NAVIGATING DEVICE

Ivan Kinsky, 23601 Draco Way, Canoga Park, Calif. 91307

Filed Nov. 24, 1986, Ser. No. 933,807
Int. Cl.[4] G06G 7/78; G01C 19/38
U.S. Cl. 364—453 8 Claims



1. A vehicle land navigating device, adapted to measure and update vehicle heading by North-seeking and navigating, comprising:

(a) means for sensing vehicle heading and for generating vehicle heading measuring and updating data, comprising:

(1) a flip table, adapted to be rotated so as to sequence through a series of angular positions and drift measurements to find North;

(2) means for rotating the flip table so as to sequence the flip table through the series of heading positions;

(3) a gyroscope, of the dual-axis type, adapted to have a first degree of freedom defining a first generally horizontal sensitive axis for North-seeking by aligning the gyroscope generally horizontal sensitive axis orthogonal to the horizontal component of the Earth Rate, and a second degree of freedom defining a second generally vertical sensitive axis for navigating, offset from the first sensitive axis, the output from which represents the heading rate of change, which gyroscope is further adapted to be mounted on the flip table to rotate therewith and to be rotated thereby through a sequence of heading positions to seek North and calibrate the gyroscope parameters including the horizontal axis drift and vertical axis drift and the vertical axis scale factor; and

(4) an inclinometer, adapted to be mounted on the flip table for movement therewith and to define the pitch or roll axis of the vehicle body depending on the flip table position;

(b) a housing for supporting the heading sensing and data generating means, adapted to be strapped down to the vehicle;

(c) means for sensing the speed of the vehicle for navigating in conjunction with the updated heading angles for the Northing coordinates generated by the vehicle speed times the cosine of the heading, and for Easting coordinates generated by the vehicle speed times the sine of the heading;

(d) means for enabling entry of data including coordinates, latitude, and map information; and

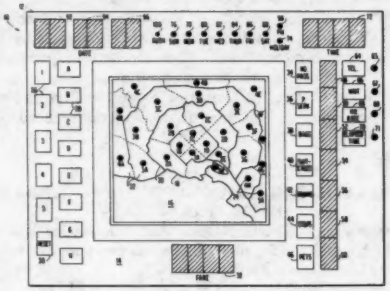
(e) means for computing vehicle heading data from the heading sensed and data generated in the heading sensing and data generating means, including the inclinometer, temperature of the gyroscope, and the angle of the flip table, and in the speed sensing means, and from information entered in the data entry enabling means by coordinating the integral of the heading rate of change with the initial heading found during North seeking.

4,800,502

FARE COMPUTER

Eugene A. Stewart, 5819 - 7th St., NW., Washington, D.C. 20011, and Ralph L. Robinson, 4009 Parkwood St., Brentwood, Md. 20722, assignors to Eugene A. Stewart, Washington, D.C. and Ralph L. Robinson, Brentwood, Md., part interest to each

Continuation of Ser. No. 741,324, Jun. 4, 1985, abandoned. This application Mar. 22, 1988, Ser. No. 172,972
Int. Cl.[4] G06F 15/50
U.S. Cl. 364—467 7 Claims



1. A fare computer, for digitally calculating an accrued fare for desired transportation within a zoned tariff locality between a first point in a selected zone of origin within the locality and a second point in a selected zone of destination within the locality according to a tariff schedule and for displaying the accrued fare and visual representations of charges contributing to the accrued fare, said fare computer comprising:

digital memory means adapted for storing rate schedule data, including one or more tariff schedules containing a schedule of primary fare charges for transportation from a point in any zone selected as the zone of origin to a point in any zone selected as the zone of destination, and a fare calculation program;

operator actuated input means for permitting selection of one of the tariff schedules and of a zone of origin and a zone of destination of the transportation;

means connecting said memory means and said input means and responsive to the selection of one of the tariff schedules and of the zone of origin and the zone of destination for obtaining from the selected tariff schedule fare charge data indicative of the fare charge for transportation from a point in the selected zone of origin to a point in the selected zone of destination and entering the obtained fare charge data into said digital memory means for storage therein;

processing circuit means adapted to interrogate said memory means for stored fare charge data therein to derive signals representative of the accrued fare and charges contributing to the accrued fare; and

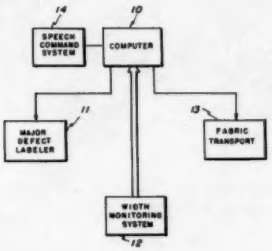
display means, responsive to the signals derived by said processing circuit means, for digitally displaying the accrued fare as the fare for transportation from a point in the zone of origin to a point in the zone of destination and for displaying visual representations of charges contributing to the accrued fare.

4,800,503

METHOD AND APPARATUS FOR GRADING FABRICS

James M. Pierce, Jr., Greensboro, and Jerry F. Mallard, High Point, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 19, 1986, Ser. No. 909,222
Int. Cl.[4] G06F 15/46, 9/00; D06H 3/02; G10L 9/00
U.S. Cl. 364—470 25 Claims



18. A fabric grading system comprising:

width monitoring means for monitoring the width of a fabric to be graded and for outputting fabric width data;

verbal command discriminating and control means for discriminating verbal commands from an operator as any one of major fabric defect, minor fabric defect, fabric transport-off, fabric transport forward and fabric transport reverse commands, for receiving and recording the fabric width data outputted from said width monitoring means and for recording the major and minor fabric defect commands;

defect labeling means for applying a defect label to the fabric in response to said control means discriminating a major defect verbal command from the operator;

fabric transport means for transporting the fabric in a forward direction in response to said control means discriminating a forward verbal command from the operator, for transporting the fabric in a reverse direction in response to said control means discriminating a reverse verbal command from the operator and for disabling said fabric transport means in response to said control means discriminating fabric transport-off verbal command from the operator.

4,800,504

INTERACTIVE OUTGOING AND INCOMING MAILPIECE PROCESSING SYSTEM

Robert T. Durst, Jr., Monroe, and Alfred C. Schmidt, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,552
Int. Cl.[4] G06F 15/20; B65H 39/02
U.S. Cl. 364—478 22 Claims

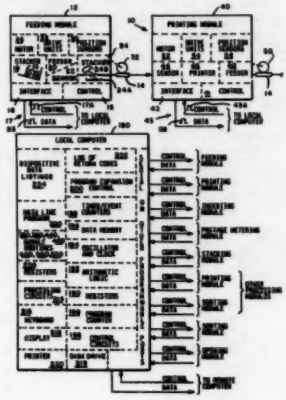
1. An interactive outgoing and incoming mailpiece processing system comprising:

a. means for processing an outgoing mailpiece for mailing to an addressee, said outgoing mailpiece including a returnable stationery item bearing an identification code identifying the addressee thereof;

b. computer means, said computer means including means for storing said identification code, said computer means including a dispositive data listing for said identification code, said listing including data corresponding to an operation to be implemented by said system, said computer means including means for causing said system to implement said operation upon sensing the identification code for said listing;

c. means for processing an incoming mailpiece, said incoming mailpiece including said stationery item when returned;

d. means for sensing said code; and



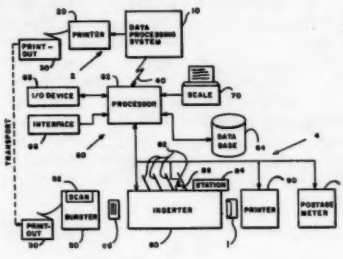
e. means for changing the dispositive data listing whereby said data corresponding to said operation may be changed.

4,800,505

MAIL PREPARATION SYSTEM

Barry H. Axelrod, Newtown; Robert T. Durst, Jr., Monroe; Kevin D. Hunter, Stratford; Leon A. Pintsov, West Hartford; William G. Hart, Stamford, and Morton Silverberg, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,418
Int. Cl.[4] G06F 15/20; B65H 39/02
U.S. Cl. 364—478 19 Claims



16. A method for controlling an apparatus for preparing items to be mailed in accordance with parameters, comprising the steps of:

(a) maintaining a data base, said data base comprising a plurality of records each of which includes selected values of said parameters for preparing one of said items, each of said records including an identification code having values selected for identifying an addressee of a given item;

(b) accessing said data base in accordance with the selected values of each of said identification codes scanned from at least one component of each of said items; and

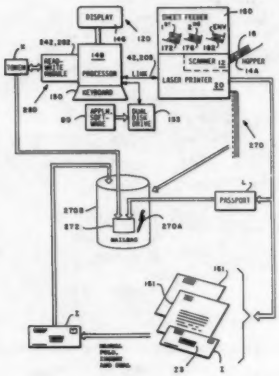
(c) outputting said selected values of parameters included with each of said selected identification code values from said accessed records to said preparing apparatus for preparing respective items to be mailed.

4,800,506

APPARATUS FOR PREPARING MAIL PIECES

Barry H. Axelrod, Newtown; Robert T. Durst, Jr., Monroe; Kevin D. Hunter, Stratford, and Alfred C. Schmidt, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,308
Int. Cl.[4] G06F *15/20*; B65H *39/02*
U.S. Cl. 364—478 **29 Claims**



1. Apparatus for preparing mailpieces, comprising:

a. printing means;

b. means for supplying a plurality of stationery items; and

c. computer means, said computer means including means for receiving and storing data including different letter datum corresponding one-for-one to different information provided for preparing each of a plurality of different mailpieces, said information for each mailpiece including a postal zip code, said computer means including means for identifying respective postal zip codes which each include a plurality of predetermined elements, said computer means including means for sorting from said data the letter datum corresponding to information which includes an identified postal zip code, said computer means including means for causing said supplying means to selectively supply to said printing means the respective stationery items for each mailpiece for which a postal zip code is identified, and said computer means including means for causing said printing means to print the information corresponding to the sorted letter datum for each mailpiece on the stationery items selected therefor.

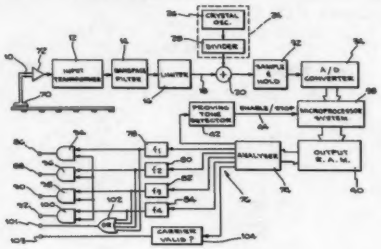
4,800,507

PROVING SAFE OPERATION

Christopher R. Brown, 65 New Road, Bromham, Wiltshire, England

Filed Dec. 15, 1986, Ser. No. 941,764
Int. Cl.[4] B61L *11/02*
U.S. Cl. 364—484 **10 Claims**

1. A method of proving correct operation of an electronic circuit capable of providing an output signal containing a frequency component corresponding to an input proving signal having a predetermined frequency comprising the steps of generating a proving signal of said predetermined frequency, superimposing said proving signal on the normal input to the electronic circuit, detecting in the output of the electronic circuit a signal indicating said predetermined frequency, and producing in response to detection of said signal a control signal connected to operate means connected to pass or inhibit the output from the electronic circuit in a sense to pass the



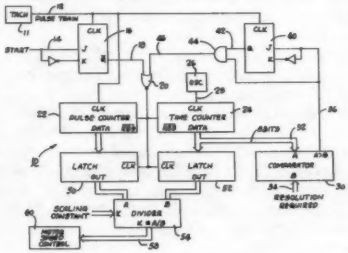
output only when and for as long as a signal having said proving signal frequency is indentified in the output.

4,800,508

FREQUENCY DETECTOR

William L. Frederich, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 30, 1986, Ser. No. 880,531
Int. Cl.[4] G01R *23/00*
U.S. Cl. 364—484 **2 Claims**



1. Apparatus for controlling the speed of a variable speed motor comprising:

tachometer means for converting a rotational output from said motor into a sequences of pulses having a pulse repetition frequency related to the motor speed;

set means for setting a base time period;

timing means for timing an extended time period which includes said base time period, said timing means initiating said extended and base time periods upon receipt of an initial pulse from said tachometer means;

said timing means for stopping said extended timing period upon the occurrence of the first pulse subsequent to the expiration of said base time period;

counting means for counting the occurrence of tachometer pulses between said initial pulse and said first pulse subsequent to the expiration of said base time period;

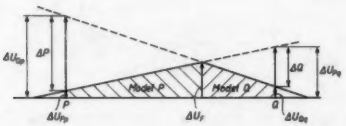
calculating means for determining a repetitive pulse frequency based upon the count of said counting means and the extended time period overwhich the count is determined; and

motor control means coupled to said calculating means to adjust the speed of said motor by comparing a desired motor speed with a sensed motor speed as indicated by said calculated pulse frequency.

4,800,509
DETECTION OF HIGH RESISTANCE FAULTS IN ELECTRICAL POWER SUPPLY NETWORK

Gunnar Nimmersjö, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Dec. 18, 1986, Ser. No. 942,988
Claims priority, application Sweden, Dec. 20, 1985, 8506063
Int. Cl.[4] G06F *15/56*; G01R *31/08*
U.S. Cl. 364—492 16 Claims



1. A method for detecting a ground fault on an electrical power transmission line located between two stations (P, Q) included in a multi-phase electrical power transmission system, in which at two end points of the transmission line, a value for current and voltage of each phase is measured, which values are supplied to a travelling wave model of the line in the respective station, the travelling wave model being used to obtain a voltage distribution along the power transmission line as seen from each station, comprising:

monitoring in each station a difference between a change in voltage on the transmission line at one station calculated with values measured at the other station before and after a suspected fault has occurred, and a change in voltage on the line at the one station calculated with values measured at the one station before and after a suspected fault has occurred, comprising the steps of:

determining a value ΔU_{Pp} as a difference between a present line voltage (U'_p), determined in station P and a corresponding line voltage (U''_p) one period earlier;

determining a value ΔU_{Qq} as a difference between a present line voltage (U'_Q), determined in station Q and a corresponding line voltage (U''_Q) one period earlier;

determining a value ΔU_{Pq} as a difference between a present line voltage (U'_{Pq}) in station Q, calculated in the travelling wave model in station P with values of currents and voltages measured in station P, and a corresponding voltage (U"Pq) one period earlier;

determining a value ΔU_{Qp} as a difference between a voltage (U'_{Qp}) in station P, calculated in the travelling wave model in station Q with values of currents and voltages measured in station Q, and a corresponding voltage (U"Qp) one period earlier;

determining a value ΔP as a difference between ΔU_{Qp} and ΔU_{Pp};

determining a value ΔQ as a difference between ΔU_{Pq} and ΔU_{Qq}; and detecting a fault if the measured difference exceeds a preset value and comprising the step of:

detecting a fault when at least one of $\Delta P > \epsilon_p$ and $\Delta Q > \epsilon q$ is determined, ϵ_p being the accepted voltage difference in station P and ϵ_q the corresponding value in station Q.

4,800,510
METHOD AND SYSTEM FOR PROGRAMMED CONTROL OF COMPUTER GENERATED GRAPHICS LAYOUT

Anders B. Vinberg, Del Mar, and Kenneth W. Colby, San Diego, both of Calif., assignors to Computer Associates International, Inc., Garden City, N.Y.

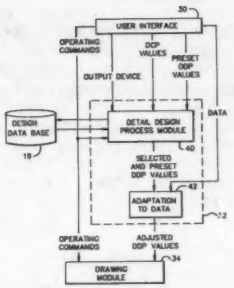
Filed Jul. 31, 1985, Ser. No. 761,182
Int. Cl.[4] G06F *15/62, 3/14, 3/037*
U.S. Cl. 364—521 14 Claims

11. A system for automatically determining the detailed layout of a graph having numerous detail design parameters (DDPs), each DDP representing a single attribute of the graph layout, in response to user selection of high-level design control parameters (DCPs), comprising:

input means for enabling a user to provide the system with a user-selected value for each of a complete set of DCPs'

a database for associating each user-selected value of each DCP provided through the input means with a predetermined set of DDP values;

memory means for storing, at an address associated with each DCP value, its associated set of DDP values;



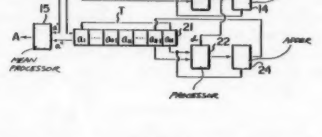
selection means adapted to receive a user-selected DCP value from the input means and for selecting from the memory means, by reference to the database, the associated set of DDP values; and

graphics process means for receiving the set of DDP values selected by the selection means from the memory means and converting the received set into graphical output primitives suitable for operating a graphics output device to produce on an output medium a graph having a layout determined by the set of DDP values.

4,800,511
METHOD OF SMOOTHING IMAGE DATA

Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1987, Ser. No. 29,926
Claims priority, application Japan, Mar. 26, 1986, 61-68174
Int. Cl.[4] G06F *15/68*
U.S. Cl. 364—521 6 Claims



4. An apparatus for smoothing image data comprising:

(i) image data means for providing original image data items $a_1, a_2, \ldots a_N$ with respect to a series of pixels in a two-dimensional image, and a constant α;

(ii) first converting means for converting a_n to a'_n which is the median value of a_n, $(a'_{n-1}+\alpha)$, and $(a'_{n-}\alpha)$ (where a'_{n-1} is a converted data item which is produced by converting the original image data item a_{n-1} to a median value);

(iii) second converting means for converting a_n to a''_n which is the median value of a_n, $(a''_{n+1}+\alpha)$, and $(a''_{n+1}-\alpha)$ (where a''_{n+1} is a converted data item which is produced

by converting the original data item a_{n+1} to a median value; and

(iv) smoothing means for determining the mean value A_n of the converted data items a'_n and a''_n with respect to the same pixel and employing the determined mean value A_n as smoothed data.

4,800,512

METHOD AND APPARATUS FOR DETERMINING AND DETECTING DATA INDICATIVE OF THE CONDITION OF MACHINES THROUGH A UNIQUE DATA PROBE INCLUDING A TEST DATA PROBE PORTION AND AN IDENTIFYING DATA SENSING PROBE PORTION

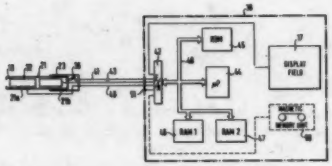
Dieter Busch, Ismaning, Fed. Rep. of Germany, assignor to Pruftechnik Dieter Busch & Partner GmbH & Co., Ismaning, Fed. Rep. of Germany

Filed Jun. 25, 1986, Ser. No. 878,366

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1985, 3523289

Int. Cl.[4] G01H *11/00*; G06F *15/46*; G01D *5/34*

U.S. Cl. 364—551.01 **21 Claims**



5. Measuring instrument for determining and evaluating data indicative of the condition of a machine provided with a plurality of measuring points, the instrument comprising a data probe having a test data probe portion which includes a test data receiver and an evaluation circuit with memory means for detecting and evaluating test data received from the respective measuring points, the data probe also having an identifying data sensing probe portion comprising a sensor unit for sensing identifying data representative of the respective measuring points, wherein the memory means comprises storage space for data specific to the measuring points and which is activated by the corresponding identifying data from the measuring points, wherein the test data probe portion and the identifying data sensing probe portion are provided in a common housing of said data probe with a measuring head, in which housing there is provided a measuring chamber for a machine-side data transfer means, said chamber having an opening towards a forward end of the measured head for receiving said data transfer means, said data transfer means also being a carrier for the identifying data specific to a measuring point, and wherein the identifying data sensing probe portion is arranged at a side of the measuring chamber viewed in a direction of placement of the data probe and is movable along the identifying data of the identifying data carrier so that both the test data and the identifying data are read through said opening of the measuring chamber.

4,800,513

AUTO-CALIBRATED SENSOR SYSTEM

Robert W. Deutsch, Sugar Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1986, Ser. No. 891,938

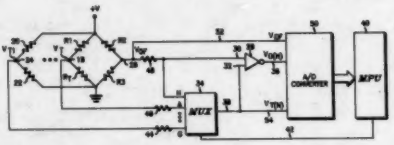
Int. Cl.[4] G06F *15/20*; G01K *15/00*

U.S. Cl. 364—571.02 **9 Claims**

1. A self-calibrating system for processing the output signal of at least one sensor, comprising:

means for establishing a reference voltage which includes an unintentional reference voltage error;

a processing circuit, including amplifier means receiving the sensor's output signal and the reference voltage, for providing an amplified output signal, the amplified output signal including a gain error and an offset error attributable to the amplified reference voltage error, the processing circuit being constructed to develop further signals for use in computing gain and offset errors; and



correcting means coupled to the processing circuit for sensing the amplified output signal from the amplifier means, said further signals, the reference voltage, and the output signal from the sensor for computing corrective factors based on the sensed signals, and for combining the corrective factors with the amplified output signal to produce a corrected sensor output signal.

4,800,514

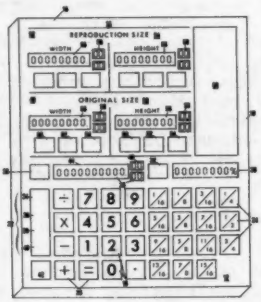
ELECTRONIC GRAPHIC ARTS PROPORTIONAL CALCULATOR

John R. Earle, 4711 S. Los Feliz, Tempe, Ariz. 85282

Filed May 28, 1987, Ser. No. 55,137

Int. Cl.[4] G06F *7/38, 3/14*

U.S. Cl. 364—715.07 **17 Claims**



1. A portable hand-held electronic calculator for decimal and fraction calculations of proportional percentages for reductions and enlargements of graphic works, said calculator comprising:

a housing containing numerical keys, fraction keys and computation means for performing a plurality of computations based upon which of said numerical keys and fraction keys are pressed, said computation means being operatively connected to said numerical and said fraction keys;

a plurality of displays connected to each of said numerical keys, said fraction keys and to said computation means for displaying numerals therein, each of said plurality of displays further including memory means for storing values entered therein, display means for displaying at least one of decimal notation and combined whole number and fraction notation, at least one of said plurality of displays further including percentage display means for displaying percentages and at least one of said plurality of displays further comprising a keyboard entry display connected to said numerical keys and to said fraction keys;

a plurality of display function keys connected to each of said plurality of displays, said plurality of display function keys further comprising at least one of an enter function key, an

enter constant key, a display clear function key, and an all clear key;

mode select means for selecting one of a proportional calculation decimal mode and a proportional calculation fractional mode; and

electric source means for providing electrical power to the calculator.

4,800,515

CIRCUIT FOR OPERATING FINITE FIELDS

Katsuya Hori, and Tsuneo Furuya, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

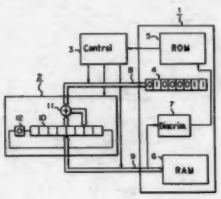
PCT No. PCT/JP85/00017, § 371 Date Jun. 16, 1985, § 102(e) Date Jun. 16, 1985, PCT Pub. No. WO85/03371, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 18, 1985, Ser. No. 776,202

Claims priority, application Japan, Jan. 21, 1984, 59-9150; Jan. 31, 1984, 59-15704

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—746.1 **3 Claims**



1. A circuit for operating a multiplication or a division in relation to the arbitrary elements α^l and α over a finite field, where α is a root of a primitive polynomial of said finite field, comprising:

an accumulator for storing said arbitrary element α^l;

a register for storing a vector representation of said primative polynomial, corresponding to the root α;

an adder for performing a (mod. 2) addition using as operands the contents of said accumulator and signals from said register; and

a control section for controlling the bit-shift in said accumulator and the operation of said adder in accordance with a program.

4,800,516

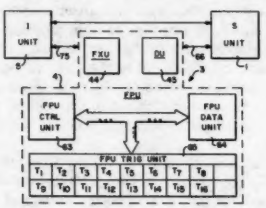
HIGH SPEED FLOATING-POINT UNIT

Stephen S. C. Si, Milpitas; H. P. Sherman Lee, and Stephen J. Rawlinson, both of Sunnyvale, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 31, 1986, Ser. No. 925,997

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—748 **14 Claims**



1. A system responsive to a floating point instruction for processing floating point first and second operands, each having a fraction and an exponent, comprising:

(a) determining means for determining from said operands whether said operands have a predetermined condition with respect to said instruction;

(b) primitive operator means for performing one or more of a plurality of floating point primitive operations on said operand data including the following primitive operations in respective machine cycles;

(1) means for comparing the exponents and calculating the alignment shift amount,

(2) means for aligning the fraction that has the smaller exponent,

(3) means for algebraically adding the fractions and obtaining the absolute value of the sum,

(4) means for testing if the result of said addition is zero, counting the number of leading zero digits in the result and adjusting the exponent,

(5) means for postnormalizing the fraction, determining exponent underflow and significant exceptions,

(c) sequencing means, responsive to said instruction, for sequencing said primitive operator means to perform a plurality of said primitive operations to execute said instruction; and

(d) selector means, connected to said sequencing means and responsive to said determining means for bypassing selected ones of said primitive operations, thereby reducing the number of machine cycles utilized in the execution of said instruction when said operand data has said predetermined condition with respect to said instruction.

4,800,517

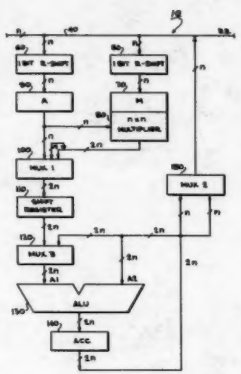
WORD-SLICED SIGNAL PROCESSOR

Safdar M. Asghar; Hwa-Sheng Pyi, both of Sunnyvale, and Dermot Dunnion, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 30, 1986, Ser. No. 891,713

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—757 **1 Claim**



1. A digital signal processor connected to a bus conducting plural-bit data words each word consisting of a predetermined number of "slices" comprising:

first means connected to said bus for receiving a first word slice, shifting said slice a selectable number of bits and storing the resulting slice;

second means connected to said bus for receiving a second word slice, shifting said slice a selectable number of bits and storing the resulting slice;

multiplier means responsive to said slices stored in said first

and second shifting means, for generating a two-slice product of said first and second slices;

first multiplexer means connected to said first shifting means and to said multiplier means for selectably generating at a set of output terminals either said first slice padded with a low-order slice of zeros or said two-slice products;

third means connected to said first multiplexer means output terminals for receiving said two-slices generated thereat, shifting said two-slices a selectable number of bits and storing the resulting two-slices;

second multiplexer means having a first set of input terminals connected to said third shifting means and a second set of input terminals for selectably generating at a set of output terminals either the two-slices received at said first set of input terminals or the two-slices received at said second set of input terminals;

arithmetic logic unit means having a first set of input terminals connected to said output terminals of said second multiplexer means and a second set of input terminals for generating a selectable two slice combinatorial result of the two-slice operands received at said first and second set of input terminals, and for accumulating and storing said selected combinatorial result; said accumulated result received at said second set of input terminals of said arithmetic logic unit and said second multiplexer means; and

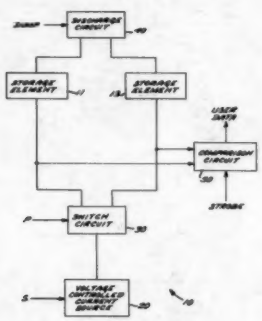
third multiplexer means having a first set of input terminals receiving a first slice of said two-slice accumulated result and a second set of input terminals receiving a second slice of said two-slice accumulated result and a set of output terminals connected to said data bus for selectably generating at said output terminals said first or said second slice applied to said input terminals.

4,800,518

DIFFERENTIAL CORRELATOR CIRCUIT

William J. Miller, North Miami, Fla., assignor to Racal Data Communications, Inc., Fort Lauderdale, Fla.

Filed Jun. 21, 1985, Ser. No. 747,213
Int. Cl.[4] G06G 7/12
U.S. Cl. 364—819 **5 Claims**



1. A correlation detection circuit comprising:

means responsive to an input data signal for providing a controlled signal as a function of the input data signal;

first and second storage means for selectively integrating said controlled signal and for providing first and second integration signals;

switching means responsive to a single reference signal for selectively coupling said controlled signal to said first and second storage means as a function of the reference signal, said switching means including differentially coupled transistors having their emitters coupled together for receiving said controlled signal and having respective collectors respectively coupled to said first and second storage means; and

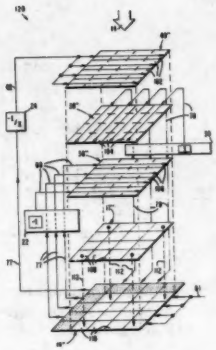
comparator means responsive to said first and second integration signals for providing a comparator output indicative of the difference between said first and second integration signals.

4,800,519

OPTICAL DATA PROCESSING SYSTEMS AND METHODS FOR MATRIX INVERSION, MULTIPLICATION, AND ADDITION

Jan Grinberg, Los Angeles; Yuri Owechko, Newberry Park; Bernard H. Soffer, Pacific Palisades, and Emanuel Marom, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 5, 1986, Ser. No. 836,675
Int. Cl.[4] G06G 9/00; G02F 1/133, 1/05, 1/03
U.S. Cl. 364—822 **17 Claims**



1. Apparatus for optically processing for N×N matrices A, B, C, and D to calculate the expression $CA^{-1}B+D$, comprising:

first modulator means for spatially modulating an optical beam in response to a signal representing a first number, and having a first set of modulation areas arranged as 2N−1 rows;

second modulator means for spatially modulating the optical beam exiting the first modulator means in response to signals representing elements in a second row of 2N−1 numbers, and having a second set of modulation areas arranged as 2N−1 columns;

third modulator means for spatially modulating the optical beam exiting the second modulator means in response to signals representing elements in a third column of 2N−1 numbers, and having a third set of modulation areas arranged as 2N−1 rows;

light detector means having $(2N-1)^2$ light detection areas arranged as a matrix array of 2N−1 rows and 2N−1 columns, where the detection areas provide an array of detector signals in response to light modulated by respective modulation areas of the first, second and third modulator means, each element in the array of detector signals being proportional, respectively, to the product of the first number, a respective element in the second row of numbers, and a respective element in the third column of numbers;

accumulator means for storing, adding and shifting the array of detector signals, and having $(2N)^2$ locations arranged as an accumulator matrix array of 2N rows and 2N columns;

means for storing the elements of the matrix A in the upper left quadrant of the accumulator array, for storing the elements of the matrix B in the upper right quadrant of the

accumulator array, for storing the elements of the matrix D in the lower right quadrant of the accumulator array, and for storing the polarity inverted elements of the matrix C in the lower left quadrant of the accumulator array; and

controls means for:

(a) providing the negative reciprocal of the upper left-most location of the accumulator array as the first number to the first modulator means;

(b) providing the 2N-1 right-most elements of the top row of the accumulator array as the second row of numbers to the second modulator means;

(c) providing the $2N-1$ bottom-most elements of the left column of the accumulator array as the third column of numbers to the third modulator means;

(d) adding the elements of the array of detector signals to corresponding elements in the portion of the accumulator array comprising the $2N-1$ right-most columns and the $2N-1$ bottom-most rows;

(e) shifting the contents of the accumulator array one column to the left and one row to the top; and

(f) repeating the operations in (a) through (e) $N-1$ times, whereby the expression $CA^{-1}B+D$ is provided in the upper left quadrant of the accumulator array.

4,800,520

PORTABLE ELECTRONIC DEVICE WITH GARBAGE COLLECTION FUNCTION

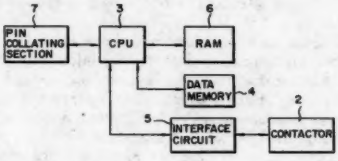
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 23, 1986, Ser. No. 922,465

Claims priority, application Japan, Oct. 29, 1985, 60-242213; Nov. 30, 1985, 60-269625

Int. Cl.[4] G06F *12/16*; G06K *5/00, 7/01*

U.S. Cl. 364—900 **5 Claims**



1. A portable electronic device comprising:

memory means divided into a plurality of areas, each area storing input data and attribute data of the input data, the attribute data comprising a first flat indicating whether input data has previously been written in the area, and a second flag indicating whether the input data previously stored in the area is deletable;

means for writing input data in the area whose first flag indicates that input data has not been previously written therein;

means for deleting input data in the area whose second flag indicates that input data previously stored therein is deletable;

first changing means for changing the first flag to indicate that input data has been written in the corresponding area or to indicate that input data has not been written in the corresponding area;

second changing means for changing the second flag to indicate that the previously stored input data is deletable in the corresponding area or to indicate that the previously stored input data is not deletable in the corresponding area; and

data rearrangement means for copying previously stored input data into another area and deleting the previously stored input data from the area where previously stored in accordance with the corresponding first and second flags for each area, and for causing the first and second flags for each area to be changed by said first and second data changing means to indicate the data rearrangement.

4,800,521

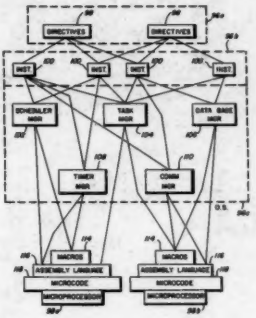
TASK CONTROL MANAGER

Jeff C. Carter, Fairport; Anthony M. Federico, West Webster, and Christopher Comparetta, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,994

Int. Cl.[4] G06F *1/00*; G03G *15/00*

U.S. Cl. 364—900 **6 Claims**



1. In a multiprocessor control for controlling a machine, the control comprising Directives, an operating system, a memory portions of said memory being allocated for operating system information, and a plurality of processors, said operating system including Instruction Modules, said Instruction Modules decoding said Directives and communicating with said processors, the control executing a plurality of tasks, said tasks being blocks of instructions for controlling said machine, aid tasks residing in at least one of said processors, said tasks being executed by at least one of said processors, the method of control of said machine including the steps of

(1) involing a task for execution,

(2) allocating operating system memory locations for said task,

(3) inserting in said memory locations information related to said task,

(4) determining the processor in which the task resides,

(5) sending a request to the processor wherein the invoked task resides, and

(6) initiating task execution in response to a Directive, said Directive in turn invoking an Instruction Module.

4,800,522

BILINGUAL TRANSLATION SYSTEM CAPABLE OF MEMORIZING LEARNED WORDS

Kouji Miyao, Kashihara; Hitoshi Suzuki, Nara; Hazime Asano, Kitakatsuragi; Shinji Tokunaga; Yasuhiro Takiguchi, both of Nara, and Shuzo Kugimiya, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1986, Ser. No. 862,323

Claims priority, application Japan, May 14, 1985, 60-103458; May 14, 1985, 60-103459; May 14, 1985, 60-103460

Int. Cl.[4] G06F *15/38, 15/02*

U.S. Cl. 364—900 **7 Claims**

1. A translation system for translating sentences in a first language to sentences in a second language, comprising:

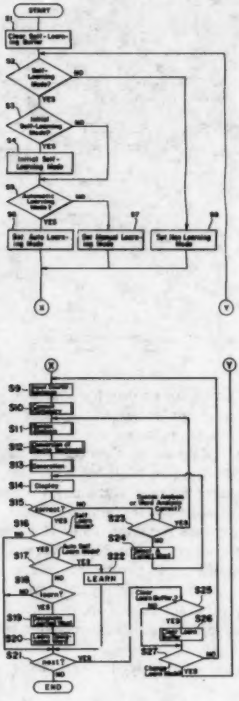
storage means for storing individual words in said first language together with a plurality of words in said second language, each word of said individual words being equivalent to a number of words in said plurality of words stored with said individual words;

means for storing an input sentence in said first language to be translated;

means for determining the part of speech of each individual word in said stored input sentence;

means for selecting a first one of said plurality of words in said second language stored with an individual word as corresponding to said individual word based on the part of speech determination;

means for selecting another one of said plurality of words as



corresponding to said individual word in response to a signal from a user indicating the previous selected word to be incorrect;

means for storing a selected word in said second language as a learned word corresponding to an individual word in said first language in response to a signal from a user indicating the correspondence to be correct; and

means for selecting the learned word as said first one of said plurality of words in subsequent translations of input sentences containing said individual word.

4,800,523

DEVICE INTERFACE CONTROLLER HAVING DEVICE SPECIFIC AND DEVICE COMMON INSTRUCTIONS SEPARATELY STORED

Eugene P. Gerety, Wolcott, and Jitender K. Vij, Trumbull, both of Conn., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 705,458, Feb. 25, 1985, abandoned. This application Feb. 16, 1988, Ser. No. 158,136

Int. Cl.[4] G06F *13/00*

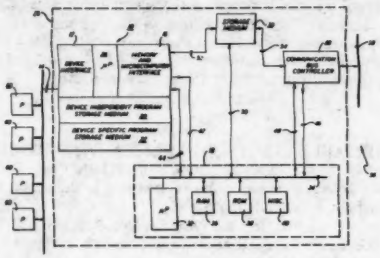
U.S. Cl. 364—900 **13 Claims**

1. A device interface controller, for use in a data transport controller which includes a storage medium for temporarily storing data transmitted from an external source, and a microcomputer for controlling transport of the transmitted data through the storage medium to any selected one of a plurality of data communication devices interconnected to the data transport controller through a device bus, said device interface controller comprising:

device bus interface means for interfacing with said device bus interconnected with said plurality of data communication devices;

interfacing means including microcomputer interfacing means for interfacing with said microcomputer and storage medium interfacing means for interfacing with said storage medium of said data transport controller;

instruction storing means separate from said storage medium, which includes common instruction storing means, for storing instructions for performing a data transfer operation which are common to all of said plurality of data communication devices, and specific instruction



storing means, for storing instructions for performing a data transfer operation which are specific to each respective one of said plurality of data communication devices, including a selected one of the data communication devices; and

a dedicated microprocessor responsive to said microcomputer through said microcomputer interfacing means for controlling data transport between said storage medium interfacing means with said storage medium and said bus device interface means with said plurality of data communication devices, wherein said dedicated microprocessor executes, for a data transport operation to the selected one of said data communication devices, common device instructions from said common instruction storing means which are common to all of said data communication devices, and specific device instructions from said specific instruction storing means which are specific to the selected data communication device.

4,800,524

MODULO ADDRESS GENERATOR

John P. Roesgen, Easton, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 811,679, Dec. 20, 1985, abandoned. This application Dec. 2, 1987, Ser. No. 127,579

Int. Cl.[4] G06F *12/00, 7/00*

U.S. Cl. 364—900 **5 Claims**

5. Apparatus for generating an address for accessing a target location in a circular buffer of length L, such address being termed a target address, the buffer having an upper address boundary and a lower address boundary, the lower address boundary being an address which is a multiple of an integer power of 2, and the target address being offset by M locations from a current buffer address A, where M is no larger than L and includes a sign bit indicating the direction of the offset from the current buffer address A, such apparatus comprising:

a. a register holding a binary word representing the length of the buffer, such register being termed the L register.

b. a ripple-carry adder for generating a summation of the

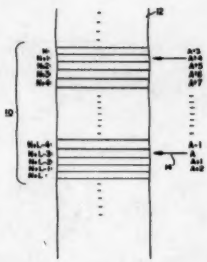
current buffer address A and the offset M, said summation being termed an absolute address;

c. means for providing as a direction control signal, the sign bit of the offset M;

d. an adder/subtractor which provides a wrapped address by adding the summation from the ripple-carry adder to the binary word in the L register in response to a direction control signal being provided in a first state and by subtracting the binary word in the L register from the summation from the ripple-carry adder in response to the direction control signal being provided in a second state;

e. the adder/subtractor also outputting on a separate set of lines, the carry bit corresponding to each sum bit;

f. means for selecting as a first boundary-crossing signal the carry bit from the ripple-carry adder which is from the same bit position as the most significant one (i.e., 1) in the binary word in the L register;



g. means for selecting as a second boundary-crossing signal the carry bit from the adder/subtractor which is from the same bit position as the most significant one (i.e., 1) in the binary word in the L register;

h. means responsive to the direction control signal for generating a wrap control signal by inverting the first boundary-crossing signal when the direction control signal is in a first state and logical-ORing the first and second boundary-crossing signals a when the direction control signal is in a second state; and

i. means responsive to the wrap control signal for selecting as the target address the absolute address when the wrap control signal is in a first state and for selecting as the target address the wrapped address when the wrap control signal is in a second state.

4,800,525

DUAL ENDED FOLDED BIT LINE ARRANGEMENT AND ADDRESSING SCHEME

Ashwin H. Shah; Richard H. Womack, both of Dallas, and Chu-Ping Wang, Carrollton, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 666,854, Oct. 31, 1984, abandoned. This application Aug. 6, 1987, Ser. No. 83,911

Int. Cl.[4] G11C *5/06, 7/00, 8/00*

U.S. Cl. 365—72 **9 Claims**

8. A memory circuit comprising:

a first bit line separated into segments 1 through N, each segment having a section line connected thereto through a section select transistor and at least one memory cell connected thereto;

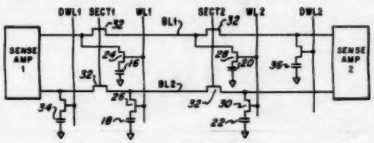
a second bit line parallel to said first bit line, said second bit line separated into segments 0 through N−1, each segment having a section line connected thereto through a section select transistor and at least one memory cell connected thereto;

a first plurality of switching means 1 through N, wherein a second terminal of said 1st switching means of said first plurality of switching means is connected to a first end of said 1st segment of said first bit line and said 2nd through Nth switching means of said first plurality of switching means are connected so that the Lth switching means of said first plurality of switching means has a first terminal connected to a second end of the Lth−1 segment of said first bit line and a second terminal connected to a first end of the Lth segment of said first bit line;

a second plurality of switching means 1 through N, wherein a first terminal of said Nth switching means of said second plurality of switching means is connected to a second end of said Nth−1 segment of said second bit line and said 1st through Nth−1 switching means of said second plurality of switching means are connected so that the Mth switching means of said second plurality of switching means has a second terminal connected to a first end of the Mth segment of said second bit line and a first terminal connected to a second end of the Mth−1 segment of said second bit line;

a first sense amplifier connected to a first terminal of said 1st switching means of said first plurality of switching means and said sense amplifier being connected to a first end of said 0th segment of said second bit line;

a second sense amplifier connected to a second terminal of



said Nth switching means of said second plurality of switching means and said second sense amplifier being connected to a second end of said Nth segment of said first bit line;

a plurality of word lines running perpendicular to said first and second bit lines, each of said word lines connected so that a word line connected to a memory cell which is connected to the Xth segment of said first bit line is also connected to a memory cell connected to the Xth−1 segment of said second bit line; and

a plurality of control lines 1 through N running parallel to said word lines, said control lines connected so that a Yth control line which is connected to a control terminal of the Yth switching means of said first plurality of switching means is also connected to a control terminal of the Yth switching means of said second plurality of switching means; and

a plurality of section control lines 1 through N runnning parallel to said word lines, said section control lines connected so that the Kth control line of said plurality of section control lines is connected to the control terminals of the section select transistors connected to the Kth and Kth−1 segments of said first and second bit lines, respectively.

4,800,526

MEMORY ELEMENT FOR INFORMATION STORAGE AND RETRIEVAL SYSTEM AND ASSOCIATED PROCESS

David F. Lewis, Monroe, Conn., assignor to GAF Corporation, Wayne, N.J.

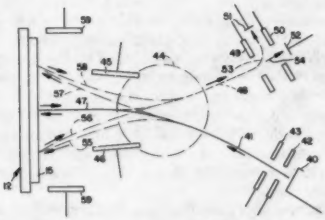
Filed May 8, 1987, Ser. No. 47,350

Int. Cl.[4] G11C *11/72*

U.S. Cl. 365—118 **42 Claims**

1. A memory element for an information storage and retrieval system in which data is transferred by a scanning electron beam, wherein said element comprises an electrically conductive layer of an electrically conductive substance to

which is laminated a layer of dielectric material, the latter having a thickness of less than 1 micrometer, a resistivity of at least 10^{16} ohm-cm, and a dielectric strength of at least 10^5 volts/cm, means disposed essentially coplanar with the exposed surface of said insulating material layer for providing a



focusing means for said electron beam, and means recognizable by said electron beam for providing spatial reference information to said system for enabling precise repeatable access to discrete locations for each bit of information in said memory element, whereby said element is capable of handling data with a resolution equal to at least 10^8 bits/cm^2.

4,800,527

SEMICONDUCTOR MEMORY DEVICE

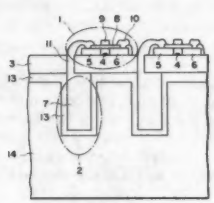
Masaharu Ozaki, Yokohama, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 111,588

Claims priority, application Japan, Nov. 7, 1986, 61-264026

Int. Cl.[4] G11C *13/00, 11/24*

U.S. Cl. 365—182 **1 Claim**



1. A semiconductor memory device comprising:

a charge holding capacitor formed on a semiconductor substrate;

an insulating layer formed on said capacitor; and

a transistor formed on a monocrystalline or substantially monocrystalline semiconductor layer which is provided by forming, on said insulating layer, a hetero material of a nucleation density sufficiently higher than that of said insulating layer and of a size small enough to allow growth of a single nucleus of a semiconductor layer, followed by crystal growth around a single nucleus formed on said hetero material.

4,800,528

NON-VOLATILE MEMORY HAVING CHARGE CORRECTION CIRCUITRY

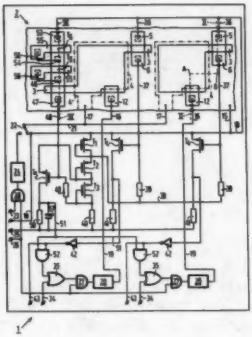
Ronald C. Geddes, Hausen, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 21,561, Mar. 2, 1987, abandoned, which is a continuation of Ser. No. 707,354, Mar. 1, 1985, abandoned. This application Dec. 3, 1987, Ser. No. 129,930

Claims priority, application Netherlands, Mar. 1, 1984, 8400661

Int. Cl.[4] G11C *7/00, 11/40, 29/00*

U.S. Cl. 365—185 **15 Claims**

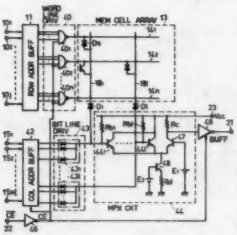


1. A semiconductor device comprising a semiconductor body having a surface-adjacent layer, a charge storage region, and at least one non-volatile memory cell which comprises a first non-volatile memory transistor, said first memory transistor comprising a control electrode capacitively coupled to said charge storage region and source and drain zones of a first conductivity type in said surface-adjacent layer, the surface-adjacent layer being of a second conductivity type opposite to the first, a channel region of the first memory transistor located between the source and drain zones and covered with an insulating layer which separates the charge storage region from the channel region, an injector region in said surface-adjacent layer, a thin insulating layer separating said charge storage region from said injector region, charge transport occurring in operation through said thin insulating layer by applying a suitable electric field to vary the quantity of charge stored in the charge storage region, characterized in that the semiconductor body further comprises a detector which has a second non-volatile memory transistor, the output signal of which, with a previously-determined quantity of charge stored in the charge storage region of said first memory transistor, forms a reference value, and means for reading the output signal of the second memory transistor for comparing said output signal of the second memory transistor with the output signal of the first memory transistor and for correcting the quantity of stored charge in both memory transistors when the reference value is exceeded.

4,800,529
SEMICONDUCTIVE MEMORY DEVICE WITH CURRENT CONTROL AND COMPARISON MEANS TO REDUCE POWER CONSUMPTION AND INCREASE OPERATING SPEED

Kouji Ueno, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1987, Ser. No. 26,899
Claims priority, application Japan, Mar. 17, 1986, 61-058714
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—189 **12 Claims**



1. A memory device having an enable state and a disable state, comprising:

word lines;

bit lines;

a memory cell array comprising a plurality of memory cells in a matrix arrangement, said plurality of memory cells being coupled to corresponding ones of said word lines and said bit lines;

input terminal means for receiving row address signals and column address signals;

access circuit means for setting a selected one of the word lines to a first level responsive to the row address signals and for setting a selected one of the bit lines to a second level responsive to the column address signals so as to designate one of said plurality of memory cells within said memory cell array;

constant current source means for maintaining a current;

comparing circuit means, operatively connected to said constant current source means and to said bit lines, for receiving a reference level and for reading information from said designated memory cell via the bit lines by comparing a bit line level of the bit line coupled to said designated memory cell with said reference level;

output circuit means, having an output impedance, for outputting the information read out by the comparing circuit means; and

control circuit means, operatively connected to receive a disable signal, for setting all word lines and all bit lines to one of a high impedance and for high level, and for setting the impedance of said output circuit means to a high impedance when the memory device is placed in the disable state by said disable signal.

4,800,530
SEMICONDUCTOR MEMORY SYSTEM WITH DYNAMIC RANDOM ACCESS MEMORY CELLS

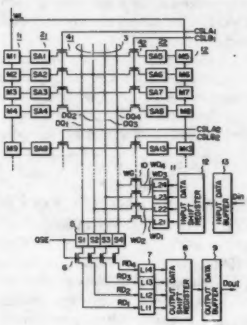
Yasuo Itoh; Fumio Horiguchi, both of Kawasaki; Shigeyoshi Watanabe, Yokohama; Kazunori Ohuchi, Yokohama, and Mitsugi Ogura, Yokohama, all of Japan, assignors to Kabushiki Kasiha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1987, Ser. No. 85,086
Claims priority, application Japan, Aug. 19, 1986, 61-193509; Aug. 20, 1986, 61-194573; Sep. 3, 1986, 61-207192
Int. Cl.[4] G11C 7/00, 11/40
U.S. Cl. 365—189 **11 Claims**

1. A semiconductor memory system with dynamic random access memory cells which are integrated in a semiconductor substrate, comprising:

first and second memory banks, a plurality of said memory cells connected to a word line being arranged in each of said memory banks;

read/write means for reading output data and writing input data from and into said memory cells, in which, while output data from said memory cells of said first memory bank latched in output data latching circuits are subsequently read out in synchronism with a column address store signal, output data from said memory cells of said second memory bank are transmitted to input/output lines and input data to be written into said memory cells of said

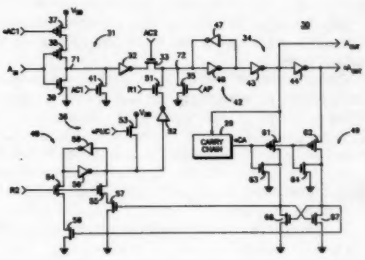


first memory bank are latched subsequently in input data latching circuits in synchronism with said column address strobe signal, and in which, while output data from said memory cells of said second memory bank latched in said output data latching circuits are subsequently read out in synchronism with said column address strobe signal, output data from said memory cells of said first memory bank are transmitted to said input/output lines and input data to be written into said memory cells of said second memory bank are latched subsequently in said input data latching circuits in synchronism with said column address strobe signal, said read/write operations for said first and second memory banks being repeated alternatively.

4,800,531
ADDRESS BUFFER CIRCUIT FOR A DRAM

Sam Dehganpour, and Perry H. Pelley, III, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1986, Ser. No. 944,784
Int. Cl.[4] G11C 7/00, 8/00
U.S. Cl. 365—222 **9 Claims**



1. An integrated circuit memory having an array requiring

periodic refreshing and having a counter for providing address information for controlling refresh of the array, an input buffer for receiving an external address signal at one of two logic states, comprising:

a CMOS NOR gate having a first input for receiving a first control signal, a second input for receiving the external address signal, and an output; said NOR gate characterized as providing information, in the form of a logic state on the output, as to the logic state of the external address signal when the first control signal is a logic low;

first coupling means, having a first input coupled to the output of the NOR gate, a second input for receiving a second control signal, and an output coupled to a precharge node, for coupling a logic state to the precharge node representative of the logic state present on the output of the NOR gate when the second control signal is received; and

precharge means for precharging, in response to a precharge signal, the precharge node to the logic state which is coupled to the precharge node when the external address signal and the first control signal are a logic low and the second control signal is received by the coupling means.

4,800,532

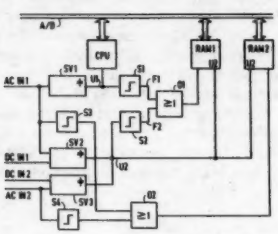
CIRCUIT ARRANGEMENT WITH A PROCESSOR AND AT LEAST TWO READ-WRITE MEMORIES

Karl-Heinz Honeck, Essingen, Fed. Rep. of Germany; David Johnson, Portland, Oreg.; Manfred Neugebauer; Walter Teutsch, both of Erlangen, Fed. Rep. of Germany; M. Vittal Kini, Portland, and Steven C. Stacey, Hillsboro, both of Oreg., assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1987, Ser. No. 125,628

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—226 **3 Claims**



1. A circuit arrangement having at least one read-write memory for address-controlled data communication connected to a processor, comprising:

a power supply unit including two memory power supply circuits connected in parallel with each other and connected to the read-write memories, each said memory power supply circuit having a maximum current capacity corresponding to the sum of the operating current of a first read-write memory and a standby current of second read-write unit;

a capacitive current buffer as a part of the output of each of said memory power supply circuits having capacitors of sufficient size to provide, upon a fault of one of said memory supplies during the operation of both said read-write memories, a voltage discharge time constant which decreases from a threshold voltage to a minimum allowable operating voltage in at least a time period which corresponds to a time require for one of said read-write memories to complete a current data communication and change to a standby mode; and

a monitoring device connected to one of said read-write memories, and to said memory power supply, which upon the discharge of the parallel memory power supply voltage to said threshold voltage causes the change into the standby mode of the read-write memory it is connected to.

4,800,533

SEMICONDUCTOR NONVOLATILE MEMORY DEVICE

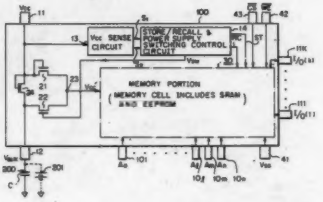
Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 29, 1987, Ser. No. 43,791

Claims priority, application Japan, Apr. 30, 1986, 61-097985

Int. Cl.[4] G11C *17/00*

U.S. Cl. 365—228 **8 Claims**


Vcc SENSE CIRCUIT
STORE/RECALL & POWER SUPPLY SWITCHING CONTROL CIRCUIT
MEMORY PORTION
(MEMORY CELL INCLUDES SRAM AND EEPROM)

1. A semiconductor nonvolatile memory device comprising:

a plurality of nonvolatile random access memory cells constituted by volatile memory cells and nonvolatile erasable programmable read only memory cells;

a first terminal for receiving a power source voltage;

a second terminal for receiving an auxiliary power source voltage;

a sense circuit, connected to said first terminal, monitoring said power source voltage to generate both a first control signal, when the power source voltage reaches a normal range, and a second control signal, when the power source voltage falls out of the normal range;

first switch means, connected between said first and second terminals, for supplying the power source voltage to said second terminal;

second switch means, connected between said first terminal and said nonvolatile random access memory cells, for supplying the power source voltage;

third switch means, connected between said second terminal and said nonvolatile random access memory cells, for supplying the auxiliary power source voltage; and

control means, connected to said nonvolatile random access memory cells, said second switch means, and said sense circuit, for recalling data stored in the nonvolatile erasable programmable read only memory cells to the volatile memory cells in response to the first control signal and for storing data stored in the volatile memory cells to the nonvolatile memory erasable programmable read only memory cells in response to the second control signal, wherein said first and second switch means are turned off when the power source voltage falls down, and said third switch means is turned on in response to said second control signal.

4,800,534

INTEGRATED MEMORY CIRCUIT

Bernardus H. J. Cornelissen, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Oct. 9, 1986, Ser. No. 916,778

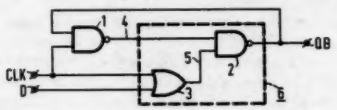
Claims priority, application Netherlands, Oct. 15, 1985, 8502811

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—233 **10 Claims**

1. An integrated memory circuit comprising: a clock input for receiving a clock signal, a data input for receiving a data bit under the control of the clock signal, and a data output, the memory circuit also including a memory loop comprising a

first and a second gate each having a switching threshold, characterized in that said first and second gates are switched by the clock signal, the switching threshold of the first gate being substantially different from the switching threshold of the second gate, and that the first gate includes a first input



coupled to an output of the second gate and a second input coupled to the clock input, an output of the first gate being coupled to a first input of the second gate which includes a second input coupled to the clock input and a third input coupled to the data input.

4,800,535

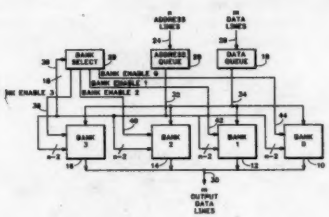
INTERLEAVED MEMORY ADDRESSING SYSTEM AND METHOD USING A PARITY SIGNAL

Gary L. McAlpine, Beaverton, Oreg., assignor to Aptec Computer Systems, Inc., Portland, Oreg.

Filed Apr. 28, 1987, Ser. No. 43,840

Int. Cl.[4] G11C *8/00*; G06F *11/10*; H03M *13/00*

U.S. Cl. 365—230 **5 Claims**



1. A system for addressing a plurality of banks of random-access memory devices, comprising:

(a) means for providing a memory address having a predetermined number of address bits, greater than one;

(b) means, responsive to a predetermined set of said address bits including the least significant bit, for producing a parity signal representative of the parity among said set of address bits; and

(c) means, responsive to said parity signal, for selecting one of said banks of memory devices based upon said parity signal.

4,800,536

EXTRUDER

Gerd Dittrich, Völklingen, Fed. Rep. of Germany, assignor to Saar-Hartimetall und Werkzeuge GmbH, Volkingen, Fed. Rep. of Germany

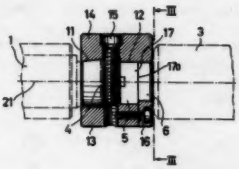
Filed Jun. 3, 1987, Ser. No. 57,782

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620267

Int. Cl.[4] B29C *1/06*

U.S. Cl. 366—78 **10 Claims**

1. An extruder, particularly for plastic materials comprising a screw having a first end portion provided with a first flat; drive means for said screw including a motion transmitting member having a second end portion provided with a second flat adjacent said first flat; and means for coupling said end portions including a first coupling element overlying and abutting said flats, a second coupling element partially surrounding



said end portions, and means for fastening said coupling elements to each other.

4,800,537

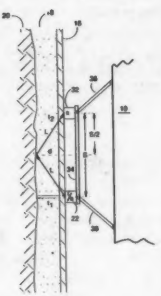
METHOD AND APPARATUS FOR DETERMINING CEMENT CONDITIONS

Houston B. Mount, II, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 1, 1986, Ser. No. 893,055

Int. Cl.[4] G01V *1/40*

U.S. Cl. 367—35 **2 Claims**



1. A method of determining the absence or presence of foreign material and/or voids in the cement adjacent a casing set within a wellbore, comprising:

(a) positioning at least one acoustic transmitting and receiving transducer and at least one acoustic receiving transducer into contact with an interior surface of the casing with the at least one acoustic receiving transducer being vertically spaced a predetermined distance from the at least one acoustic transmitting and receiving transducer;

(b) transmitting from the at least one acoustic transmitting and receiving transducer at least one pulse of acoustic energy through the casing to a reflecting boundary representative of an interface between disparate material surrounding the wellbore;

(c) measuring the times between the transmission of the pulse of acoustic energy and the reception of the acoustic energy at the at least one acoustic transmitting and receiving transducer and the at least one acoustic receiving transducer;

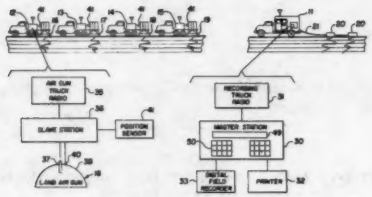
(d) from the measured times and the known distance between the at least one acoustic transmitting and receiving transducer and the at least one acoustic receiving transducer determining the acoustic velocity associated with the cement; and

(e) determining the absence or presence of foreign material and/or voids in the cement by comparing the acoustic velocity associated with the cement of step (d) to a known acoustic velocity associated with the cement.

4,800,538
METHOD OF AND SYSTEMS FOR SEISMIC EXPLORATION

Paul R. Passmore, Dallas, and William A. Nance, Carrollton, both of Tex., assignors to Refraction Technology, Inc., Dallas, Tex.

Filed Mar. 31, 1986, Ser. No. 846,583
Int. Cl.[4] G01V 1/22
U.S. Cl. 367—55 17 Claims



1. A system for seismic exploration including a master station and a plurality of slave stations for use with a plurality of remotely located seismic sources comprising:

means at said master station for generating a start signal, means for transmitting over a single frequency radio link said start signal to each of said slave stations, one of which is selected with its associated source as a designated unit,

means for receiving said start signal at each of said slave stations to activate their associated sources to generate seismic energy in a preprogrammed mode,

means at each slave station for acquiring the time break and amplitude of the seismic energy generated at each source,

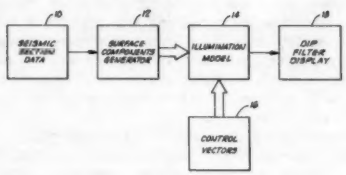
means for transmitting via the radio link to the master station in real time the time break data of the source at said designated unit, and

means at each slave station for sequentially transmitting to said master station via the same radio link prior to the generation of the next start signal the amplitude data representative of the signature of each of the sources.

4,800,539
METHOD AND APPARATUS FOR SEISMIC DIP FILTERING

Kruger C. Corn, Ponca City, and Gary L. Raney, Stillwater, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 16, 1985, Ser. No. 809,684
Int. Cl.[4] G01V 1/34
U.S. Cl. 367—72 9 Claims



1. A method for enhanced display of seismic data, comprising:

inputting selected attribute seismic section data;

orienting said seismic section data in a predetermined multidimensional display format relative to a preselected apparent viewing angle; and

adjusting the apparent illumination angle to establish a preferentially highlighted display of selected portions of the seismic section;

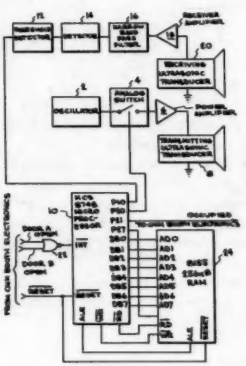
said apparent illumination angle being established by transforming a selected vector of images of the seismic section data in accordance with an illumination model of selected angular relationship, said selected vector of images being a vector that is normal to the viewing surface presenting the data at every sample point;

said apparent illumination angle being determined for an illumination point that is disposed at an angle theta from a reference point around to the illumination position relative to the plane of the viewing surface, and at an angle phi from the plane of the viewing surface to the illumination position as projected on a unit vector hemisphere that would contain said viewing surface, said angle theta determining filter orientation and said angle phi determining overall surface brightness being varied interactively to optimally enhance the output display of the seismic section data.

4,800,540
DISCRIMINATING ULTRASONIC PROXIMITY DETECTION SYSTEM

Wayne C. Annala, Durango, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1986, Ser. No. 937,781
Int. Cl.[4] G01S 9/66
U.S. Cl. 367—87 20 Claims



1. A method of detecting the presence of an object comprising:

setting up a reference table with values at locations describing a Burst-Echo-Signature of a burst of ultrasound transmitted into an environment without the object;

transmitting periodic bursts of ultrasound into the environment;

receiving a plurality of echoes from the environment for each transmitted burst of ultrasound; and

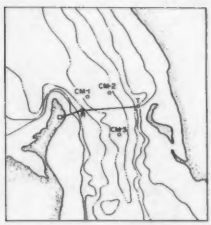
comparing the echoes from a plurality of bursts of ultrasound with the reference table to determine if a Burst-Echo-Signature of the present environment consistently differs from the Burst-Echo-Signature of the environment without the object.

4,800,541

METHOD FOR UNDERWATER ACOUSTIC DIRECTION SENSING

David M. Farmer, Saanichton, and Jane A. Verrall, Victoria, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 12, 1987, Ser. No. 13,933
Int. Cl.[4] G01S 3/80
U.S. Cl. 367—424 7 Claims



1. A method of determining a bearing "S" of a signal transmitter relative to a remote signal receiver, said method comprising the steps of:

(a) transmitting, from said transmitter, a signal pulse having a carrier frequency "ω", and having a high signal to noise ratio;

(b) sampling said transmitted pulse at first and second closely spaced receivers displaced from said transmitter by a distance "D" which may vary over time;

(c) for each of said receivers, deriving a sampled pulse phase component by:

(i) deriving in-phase and quadrature components of said sampled pulse and,

(ii) deriving an arctangent of each of said in-phase and quadrature components;

(d) for each of said receivers, measuring an arrival time "t" at which said sampled pulses arrive at each of said receivers respectively, by fitting a predetermined function, by least squares, to one of, a modulus, or, an amplitude envelope, of said pulse samples;

(e) determining a difference "ωt" between said arrival times of said sampled pulses at each of said receivers;

(f) determining an approximate phase difference

$$\Delta\phi = 2\pi\omega\delta t$$

between said sampled pulses;

(g) using said phase difference to resolve phase ambiguity of said phase components; and,

(h) determining said bearing "S" as

$$\cos(S) = \frac{(\Delta\phi)(c)}{(2\pi)(\omega)r}$$

where

"c"=propagation velocity of said pulse; and,

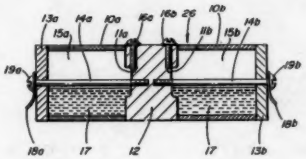
"r"=displacement between said receivers.

4,800,542

TILT SENSOR FOR RESOLVING LEFT-RIGHT AMBIGUITY IN UNDERWATER ACOUSTIC DETECTION SYSTEMS

J. Barrie Franklin, and Garfield W. McMahon, both of Dartmouth, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Canada

Filed Nov. 13, 1987, Ser. No. 120,126
Claims priority, application Canada, Dec. 8, 1986, 524791
Int. Cl.[4] G01V 1/38; G01F 23/26; H04R 1/02
U.S. Cl. 367—154 10 Claims



1. A variable capacitance tilt sensor comprising:

a substantially cylindrical shell made of high permittivity dielectric material and closed at both ends by end caps made of electrically insulating material to form an enclosed space, said enclosed space being partially filled with mercury,

first electrically conducting means comprising an electrode in contact with the outside wall of the shell and in the shape of two sinusoidally-shaped portions,

and second electrically conducting means which is in electrical contact with the mercury,

wherein the capacitances of the two electrode portions is represented by the equations:

$$C_{S1} = C_S(1 - \sin\theta)/2$$

$$C_{S2} = C_S(1 + \sin\theta)/2$$

wherein C_S is the capacitance of a single first electrode portion when fully electrically coupled with the mercury and θ is the tilt angle of the sensor.

4,800,543

TIMEPIECE COMMUNICATION SYSTEM

Ross Lyndon-James; Alfred P. Gnadinger, both of Colorado Springs; Donald L. Black, Breckenridge, and Carlos P. de Araujo, Colorado Springs, all of Colo., assignors to Ramtron Corporation, Colorado Springs, Colo.

Filed Dec. 3, 1987, Ser. No. 128,550
Int. Cl.[4] G04B 47/00
U.S. Cl. 368—10 23 Claims

1. A user operated multi-function timepiece system comprising:

a housing;

a time indication device mounted within or upon said housing;

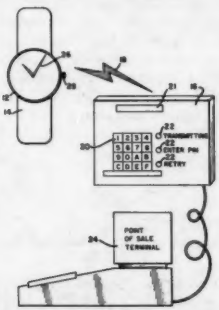
timekeeping apparatus coupled to said time indication device;

a power source coupled to said timekeeping apparatus;

integrated circuitry including memory and a communication circuit coupled to said battery and located within said housing, said memory including unique data for each respective user;

a transmitter coupled to said integrated circuitry and located within said housing for transmitting data to a location outside said housing;

a reader device including a receiver arranged to receive signals transmitted by said transmitter;



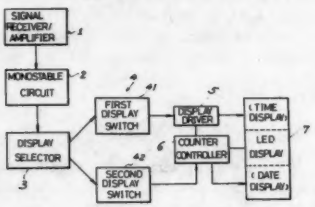
a keypad coupled to said receiver; and means for comparing information entered via
said keypad with data from said memory.

4,800,544

AUDIO-ACTUATED DIGITAL CLOCK WITH DOUBLE SELECTIONS

Chien-Na Hsu, P.O. Box 96-392, Taipei, Taiwan

Filed Jul. 6, 1988, Ser. No. 215,796
Int. Cl.[4] G04C *17/00, 19/00*
U.S. Cl. 368—69 **3 Claims**



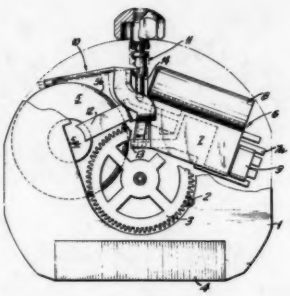
1. A digital clock comprising:
an acoustic-signal receiver and amplifier operatively receiving and amplifying an acoustic signal by a human clap;
a monostable circuit processing an acoustic signal as transmitted from said signal receiver and amplifier for producing square-wave pulse;
a display selector selectively turning on a display switch means as triggered by said square-wave signal from said monostable circuit; said display selector, said monostable circuit and said amplifier powered by a first power source;
a light-emitting diode digital display means energized and controlled by a counter controller for the display of a time or date;
the display switch means having a first display switch selectively connecting a display driver of said counter controller having a time base therein and a second power source for powering a light-emitting diode digital display means for displaying a time of hours, minutes and seconds thereof, and a second display switch selectively connecting a date-display pin of said counter controller for displaying a date of month and day;
the improvement which comprises:
said display selector including a first flip-flop having an input connected to an output of said monostable circuit and an output connected to said first display switch through a capacitor and a resistor for setting a RC timing constant for the display time duration of hour, minute and second; and a second flip-flop following said first flip-flop having an output of second flip-flop connected to said second display switch; whereby upon a single clap by a user, the first flip-flop will be actuated to turn on said first display switch for displaying the time; and upon double claps, the two flip-flops will be actuated to turn on said second display switch for displaying a date.

4,800,545

REMOVABLE STEM AND SWITCH ACTUATOR FOR ELECTRONIC WRISTWATCH

Paul Wuthrich, Watertown, and Edward Kaulins, New Milford, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Apr. 3, 1987, Ser. No. 33,933
Int. Cl.[4] G04B *27/02, 29/00*
U.S. Cl. 368—190 **11 Claims**



1. A removable stem and switch actuator assembly for an electronic wristwatch having a frame, and an electronic circuit including at least one switch contact terminal,
a cylindrical stem disposed in said frame and defining a first deep lateral groove and a second shallow lateral groove, said grooves being axially spaced on the same side of said stem and defining inclined detenting surfaces therebetween,
a switch actuator mounted in said frame having a detent portion, a flexible spring portion biasing the detent portion into said stem grooves, and having a switch contact portion adapted to touch said switch contact terminal when the detent portion is biased into said deep groove by axial movement of said stem, whereby partial rotation of the stem raises the detent portion out of said grooves permitting axial removal of the stem from the frame.

4,800,546

OPTICAL INFORMATION RECORD/REGENERATING APPARATUS WITH DEVICE FOR PROHIBITING MOVEMENT OF OPTICAL HEAD

Satoshi Shikichi; Akio Aoki, both of Tokyo, and Kazuo Minoura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

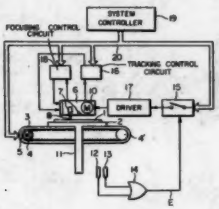
Filed Sep. 24, 1986, Ser. No. 910,974
Claims priority, application Japan, Sep. 26, 1985, 60-211143
Int. Cl.[4] G11B *7/085*
U.S. Cl. 369—44 **6 Claims**

1. An optical information recording and/or regenerating apparatus comprising:
an optical system for forming at least one light spot on an optical information recording medium provided with plural tracks and having a track jump area therein;
an optical head including moving means for movably supporting said optical system;
optical system driving means for driving said moving means

so that said light spot is moved, in said track jump area, from a track at least to another track adjacent thereto;

head move means for moving said optical head relative to said optical information recording medium in a direction substantially perpendicular to the tracks;

detection means for detecting whether said light spot is positioned in said track jump area;



tracking control means for controlling both said optical system driving means and said head move means according to a tracking error signal; and

prohibition means for prohibiting the movement of said optical head by said head move means when said detection means detects that the light spot is positioned in said track jump area.

4,800,547

OPTICAL RECORD CARRIER SCANNING APPARATUS WITH SCANNING BEAM FOCUS ERROR DETECTION

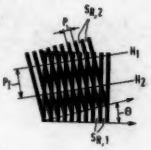
Henricus M. M. Kessels, and Christiaan H. F. Velzel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1986, Ser. No. 939,205

Claims priority, application Netherlands, Jul. 18, 1986, 8601876

Int. Cl.[4] G11B 7/00

U.S. Cl. 369—45 **7 Claims**



1. An improved apparatus for scanning the information surface of an optical record carrier, which apparatus comprises a source of a beam of radiation, means for focusing such beam into a scanning spot on the information surface which produces reflected radiation therefrom, and a focus-error detection system producing a focus error signal signifying any deviation between the plane of focus of the radiation spot and the information surface, such improvement being characterized in that the focus-error detection system comprises:

a first and a second optical diffraction grating arranged parallel to each other in succession in the path of the radiation reflected from the information surface of said record carrier, each grating having a constant strip period, the directions of the grating strips of the two gratings being at a small angle relative to each other so as to form an interference pattern of light and dark bands in radiation emergent from the second grating, such interference pattern having an orientation which changes in accordance with deviations between the plane of focus of said radiation spot and said information surface; and

an assembly of radiation detecting elements arranged adjacent the second grating to receive the radiation emergent therefrom, such assembly having coordinate axes oriented at an angle relative to the orientation of said interference pattern at the location of said assembly; whereby changes in the orientation of said interference pattern change the angle thereof relative to said assembly and cause corresponding changes in output signals produced by the detecting elements of said assembly.

4,800,548

OPTICAL RECORDING AND REPRODUCING APPARATUS WITH ABNORMALITY DETECTOR

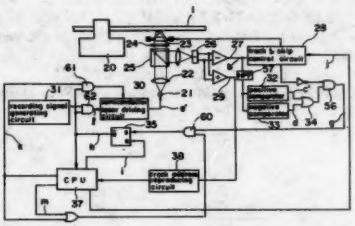
Kenji Koishi, Kawabe, and Tamotsu Matsuo, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 22, 1987, Ser. No. 64,605

Claims priority, application Japan, Jun. 20, 1986, 61-145104; Sep. 22, 1986, 61-224471; Sep. 22, 1986, 61-224472

Int. Cl.[4] G11B 27/36

U.S. Cl. 369—54 **8 Claims**



1. An optical recording and reproducing apparatus comprising an optical recording and reproducing means for focusing a laser light source onto an optical disc to record or reproduce the information, an abnormal record detecting means which detects that the abnormal condition has been caused where the normal record operation cannot be effected when the information is recorded by the optical recording and reproducing means onto the optical disc, a write protecting means for changing from the recording state to the non-recording state the optical power level of the laser light source during the recording operation by said abnormal record detecting means, a diagnostic means for confirming that said abnormal record detecting means and said write protecting means normally operate.

4,800,549

METHOD AND APPARATUS FOR SEEKING TARGET ADDRESS WITH ERROR CHECK CODE

Tamotsu Yamagami, Kanagawa, and Yoichiro Sako, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 6, 1987, Ser. No. 47,699

Claims priority, application Japan, May 31, 1986, 61-126005; May 31, 1986, 61-126006

Int. Cl.[4] G11B 7/00, 21/00

U.S. Cl. 369—56 **13 Claims**

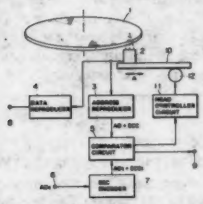
1. A method for seeking a target address on a record medium on which has been recorded data divided into plural blocks in correlation with an address for each block and an error check code which is encoded based on each address, said method comprising the steps of

a. forming from a supplied target address an error check code to be appended to said target address;

b. reading data recording on the medium and extracting the address therefor with the corresponding error check code;

c. comparing said target address and the error check code formed therefrom with said extracted address and corresponding error check code; and

d. repeating steps (b) and (c) until the comparison in step (c) indicates that the error between the target address and the



extracted address is less than a predetermined number and then designating the currently extracted address to be the target address.

4,800,550

MULTI-FORMAT OPTICAL DISK RECORDING/REPRODUCING SYSTEM

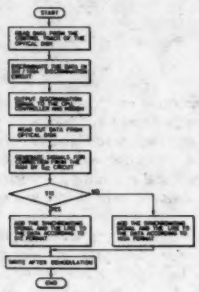
Keiichi Yamauchi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,126

Claims priority, application Japan, Jul. 3, 1986, 61-157536

Int. Cl.[4] G11B *20/10, 5/09*

U.S. Cl. 369—59 **6 Claims**



1. A disk recording/reproducing system, comprising:

means for recording/reproducing to/from a rotating disk a group of data, said group of data comprising digital recording data, error detection and correction codes for said digital recording data and synchronizing signals, said group of data being arranged selectively in a first format and a second format, said synchronizing signals being present in said first format at first intervals and being present in said second format at second intervals different from said first intervals; and

control means for controlling said recording/reproducing means to convert between said group of data and said digital data selectively according to either said first or said second format.

4,800,551

METHOD AND APPARATUS FOR FEEDING CARD

Philip R. Norris, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 15, 1987, Ser. No. 50,039

Int. Cl.[4] G11B *17/04, 25/04*

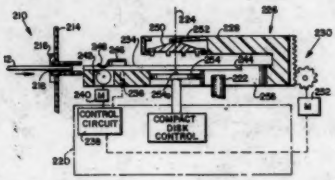
U.S. Cl. 369—77.1 **42 Claims**

1. Apparatus for transferring a generally rectangular card having thereon binary coded information, in concentric and/or spiral tracks, along a predetermined path to a rotational reference axis whereat the card is rotated thereabout, said apparatus comprising:

a housing assembly including an opening thereinto;

a binary coded information reader and/or writer device disposed in said housing assembly;

means disposed in said housing assembly for transferring the card from said opening to the reference axis; and



means for positioning the card at the reference axis and for cooperating with said transferring means so that a longitudinal axis of the card is substantially parallel to said path during transfer of the card along at last a portion of said path and for allowing rotation of the card about the reference axis, whereby the tracks can be read and/or written by said reader and/or writer device.

4,800,552

SEMICONDUCTOR MEMORY DEVICE WITH RESET SIGNAL GENERATING CIRCUIT

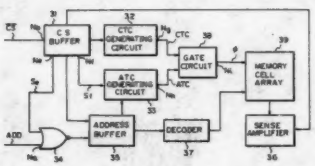
Atuo Koshizuka, Kawasaki, and Kazuto Furumochi, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 15, 1986, Ser. No. 941,437

Claims priority, application Japan, Dec. 18, 1985, 60-282736; Dec. 19, 1985, 60-284406

Int. Cl.[4] G11C *7/00, 8/00*

U.S. Cl. 365—190 **8 Claims**



1. A semiconductor memory device having a chip selection state and a chip non-selection state having a pulse width defined with respect to a predetermined time period and receiving an address signal and a chip selection signal, said device comprising:

a pair of signal lines for transferring a complementary signal;

reset means, operatively connected between said signal lines, for equalizing potentials of said signal lines in response to a reset signal;

a first clock generating circuit, connected to receive the chip selection signal, for generating a first clock signal in response to a transition of the chip selection signal, the transition being from the chip non-selection state to the chip selection state;

a second clock generating circuit, connected to receive the address signal, for generating a second clock signal in response to a transition of the address signal, the second clock signal being generated during a generation of the first clock signal and terminated at a predetermined time period after the generation of the first clock signal is terminated;

a logical OR circuit, connected to said first and second clock

generating circuits, for receiving the first and second clock signals and outputting the reset signal; and

a control circuit, operatively connected to said second clock generating circuit, for permitting the generation of the second clock signal when a pulse width, corresponding to a time period of the chip non-selection state, of the chip selection signal is shorter than a predetermined time period.

4,800,553

DEVICE FOR RECORDING INFORMATION ON AND PLAYING IT BACK FROM A DRIVEN RECORDING MEDIUM

Helmut Laufer, St. Georgen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

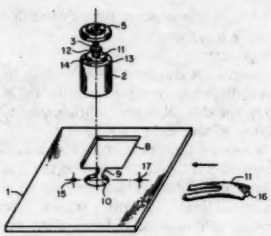
PCT No. PCT/EP86/00092, § 371 Date Oct. 5, 1987, § 102(e) Date Oct. 5, 1987, PCT Pub. No. WO87/05144, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 25, 1986, Ser. No. 138,377

Claims priority, application Fed. Rep. of Germany, Jan. 28, Feb. 25, 1986, 3502708

Int. Cl.[4] G11B *33/02, 19/20;* H02K *5/00*

U.S. Cl. 369—263 **7 Claims**



1. A device for recording information on and/or playing back the information from a recording medium driven by a motor, comprising: a motor having a centering shoulder; stationary centering means corresponding to the shape of said motor and having a bore corresponding to said centering shoulder; said centering shoulder having a projection extending beyond said centering means; said projection having a groove; and a resilient element engaging said groove, said centering means resting against said resilient element; and a turntable preassembled to said motor prior to mounting in place free of screws.

4,800,554

DISK MAGAZINE

Hidetoshi Yamasaki, Atsugi, and Masae Murata, Yamato, both of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Sep. 29, 1987, Ser. No. 102,194

Claims priority, application Japan, Oct. 1, 1986, 61-151057; Oct. 1, 1986, 61-151059

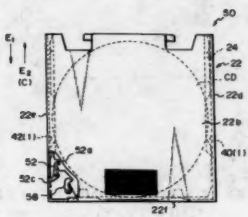
Int. Cl.[4] G11B *17/00, 23/04*

U.S. Cl. 369—291 **17 Claims**

1. A disk magazine having a plurality of disk trays each carrying a disk in a coaxial disposition when said tray is properly inserted, said disk magazine being of the type which is mountable in a disk playback device which is operable to selectively play back the disks, comprising:

a plurality of trays each having a disk seat portion for receiving a disk and each having a generally rectangular shape which includes four corner portions;

a magazine casing having a top and bottom wall along with opposed side walls and a back wall to thereby define an enclosed casing which is open at the front through which said disk-carrying trays are inserted in a disk-insertion direction, said casing having a plurality of tray guides disposed on the inside of each of said opposed side walls and arranged to receive disk-carrying trays inserted into said casing through said front opening, said trays being insertable into said casing into a fully inserted position when said tray is inserted into opposite aligned tray guides on said opposed side walls and when said tray is inserted



into said opposite aligned tray guides in a desired orientation; and

cooperable means on said casing and said trays for preventing said trays from being inserted into said fully inserted position when said trays have not been inserted into opposite aligned tray guides or when said trays have not been inserted into said casing in said desired orientation.

4,800,555

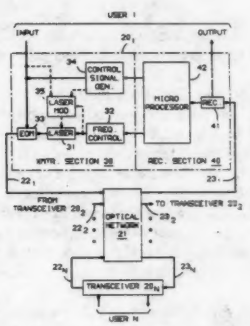
TECHNIQUE FOR REPELLING CARRIERS IN OPTICAL COMMUNICATIONS TO MINIMIZE MUTUAL INTERFERENCE

Gerard J. Foschini, Sayreville, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 3, 1987, Ser. No. 34,135

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—3 **3 Claims**



1. A transceiver for use in a frequency division multiplexing (FDM) lightwave communication system, the transceiver comprising:

a transmitter section (30) including;

means (31) for generating a predetermined nominal lightwave carrier signal;

means (33–35) for modulating the nominal lightwave carrier signal from the generating means with an information signal to be transmitted from the transmitter section to a remote transceiver; and

means (32) for generating control signals to the generating means for causing said generating means to slowly dither

the nominal lightwave carrier signal to a first carrier frequency on a first side of the nominal carrier signal and then to a second carrier frequency on a second side of the nominal carrier signal opposite the first side thereof in a manner that enables a collective background interference to be sensed for each of the first and second sides of the nominal carrier frequency by the remote transceiver for deriving a control signal for transmission back to the generating means to reposition the carrier and situate the carrier more favorably amid the background interference.

4,800,556

OPTICAL DATA TRANSMISSION WITH FREQUENCY MULTIPLEXING

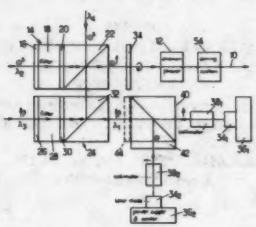
Jean Charlier, Pontoise; Bernard Geenen, Mareil sur Mauldre; Bernard Laurent; Jean Lorsignol, both of Toulouse; Andre Malherbe, Pontoise, and Jean-Luc Perbos, Toulouse, all of France, assignors to Matra, Paris, France

Filed May 6, 1987, Ser. No. 46,350

Claims priority, application France, May 6, 1986, 86 06506

Int. Cl.[4] H04B 9/00

U.S. Cl. 370—3 7 Claims



1. In an optical transmission system with multiplexing of at least three channels at different wavelengths, a transmitter comprising:

(a) first, second and third laser diode means delivering linearly polarized optical beams at respective wavelengths λ2, λ3 and λ4 which are mutually different,

(b) an assembly located in the path of the light of wavelength λ2 emitted by said first diode means and including a plate which is substantially quarter-wave for a wavelength equal to (2λ2−λ4), a filter having a band pass centered on wavelength λ2, a plate which is substantially quarter-wave for wavelength λ4 and a polarizer, the first diode means being oriented so that its beam is transmitted by the polarizer,

(c) first means for directing the light from said third diode means onto the polarizer along a direction at 90° from the direction of the beam of wavelength λ2 and with the same polarization direction, so that the beam of wavelength λ4 is reflected towards said filter and back by said filter along an output path common with the output path of the light having wavelength λ2, and

(d) second means for directing the light from said second diode means, having wavelength λ3 intermediate between λ2 and λ4, onto the polarizer in a direction opposite to that of the light beam of wavelength λ4 and with a polarization orthogonal to that of the light of wavelength λ4, so that the light of wavelength λ3 is reflected along a path coaxial with said common output path.

4,800,557

OPTICAL DEMULTIPLEX TRANSMISSION EQUIPMENT

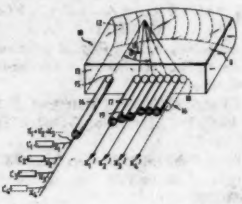
Jens Weber, Berlin, Fed. Rep. of Germany, assignor to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 6, 1985, Ser. No. 763,010

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1984, 3431448

Int. Cl.[4] H04B 9/00; G02B 6/34

U.S. Cl. 370—3 18 Claims



1. An optical demultiplex transmission apparatus comprising:

a plurality of light transmitters for emitting light signals of discrete wave lengths;

a dispersion grating;

a first light conductor disposed between said light transmitters and said dispersion grating and directed at said dispersion grating for conducting a multiplex signal formed by superposition of said light signals; and

a plurality of second light conductors each having an input end arranged in a diffraction plane of the dispersion grating, for individually decoupling the light signals from said multiplex signal into individual signals having discrete wave lengths, said second light conductors also having respective input ends adjacently arranged in juxtaposition to each other, said second light conductors including output conductors and spacing conductors interpersed therebetween, only every nth second light conductor forming an output conductor where N is a natural number greater than one, adjacent said output conductors being spaced apart by said spacing conductors;

said light transmitters emitting said light signals with their discrete wave lengths being tuned so that said light signals are diffracted by said grating to substantially impinge only on said output conductors.

4,800,558

TELEPHONE SWITCHING SYSTEM FRAME SYNC GENERATOR

Mark A. Nichols, Las Vegas, Nev., assignor to Pathfinder Systems, Inc., Las Vegas, Nev.

Filed Mar. 3, 1987, Ser. No. 21,235

Int. Cl.[4] H04J 3/02

U.S. Cl. 370—67 1 Claim

1. In a telephone switching system which includes a group of codecs, a separate analog line coupled to each codec, a bus output line common to all codecs in said group, and a separate timing input line coupled to each codec, the improvement of means for generating timing signals on said timing input lines, comprising:

clock means for generating a high frequency clock signal;

divider means coupled to said clock means, for generating a plurality of substantially square wave signals including a first binary signal of a first low frequency and a plurality of additional binary signals of progressive 2's multiples of said first frequency, all synchronized to the first signal;

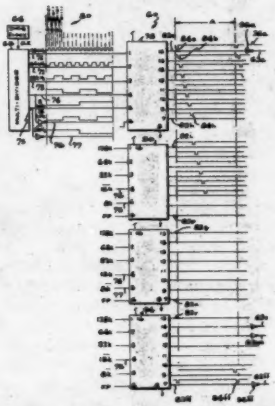
an integrated circuit which has a plurality of input lines that each represent a bit of predetermined significance and that each receive a different one of said binary signals, said

integrated circuit also having a plurality of output lines that each carries a square wave only while the binary signals on its input lines define a predetermined number, whereby each of said output lines carries a square wave for a predetermined small minority of the time;

each of said output lines is connected to a different one of said plurality of codecs, to control each codec to operate during a different short period of time to sample the analog signal on its analog line and deliver a burst of binary signals on said bus representing the analog signal sample;

said system includes four of said integrated circuits;

said divider means includes means for generating the inverse



of said first low frequency signal and the inverse of a second signal whose frequency is twice said low frequency;

each of said four integrated circuits receives a different combination of inverse and noninverse of said first low frequency signal and said second signal, with a first integrated circuit receiving said first and second signals, with a second integrated circuit receiving the noninverse of said first signal and the inverse of said second signal, with a third integrated circuit receiving the inverse of said first signal and the noninverse of said second signal, and with a fourth integrated circuit receiving the inverse of said first signal and the inverse of said second signal.

4,800,559

ETHERNET AND BROADBAND LAN INTERFACE

Michael Flores, Springfield; Stephen C. Foster, Herndon, and Gary J. Bisaga, Reston, all of Va., assignors to Contel Information Systems, Inc., Fairfax, Va.

Filed Jul. 30, 1986, Ser. No. 890,457
Int. Cl.[4] H04J 3/24
U.S. Cl. 370—94 **11 Claims**

1. A broadband/baseband interface for passing data packets between a broadband medium and a baseband medium, said interface comprising:

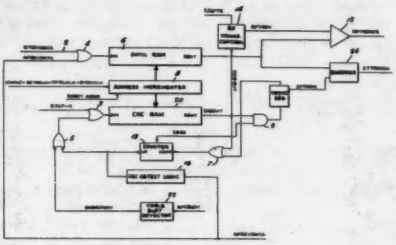
means for receiving a data packet from said broadband medium;

detecting means for recognizing errors in said data packet, said errors including false end-marks found in said data packet, and an actual end-mark implanted in said data packet to mark the end of said data packet;

counting means for counting said false and actual end-marks;

transmitting means for transmitting said data packet over said baseband medium; and

control means associated with said counting means for counting the false and actual end-marks registered by said counting means and stopping said transmitting means



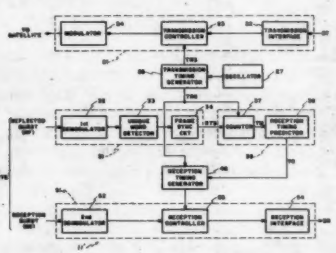
effective when said actual end-mark is counted by said control means.

4,800,560

SYNCHRONIZATION CONTROL CAPABLE OF ESTABLISHING SYNCHRONIZATION WITHOUT TRANSMISSION OF DISTANCE INFORMATION BETWEEN CONTROL AND LOCAL EARTH STATIONS

Takahiro Aoki, and Shunichiro Tejima, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 13, 1987, Ser. No. 25,342
Claims priority, application Japan, Mar. 15, 1986, 61-56086
Int. Cl.[4] H04J 3/06
U.S. Cl. 370—104 **6 Claims**



1. In a control earth station for use in a time division multiple access network to communicate with a local earth station through a geostationary satellite which fluctuates from a standard position into a deviated position with time with a spatial deviation left between said standard and said deviated positions, said control earth station comprising transmission timing means for transmitting a transmission reference timing signal towards said geostationary satellite, first detecting means for receiving a reception timing signal which results from the transmission reference timing signal sent back from said satellite, and reception timing control means coupled to said transmission timing means and said first detecting means for controlling a reception time instant determined for said local earth station, the improvement wherein said reception timing control means comprises:

measuring means responsive to said reception timing signal for measuring a time difference between said transmission reference timing signal and said reception time instant to determine an actual distance between said control earth station and said satellite;

standard delay providing means for providing a standard delay time determined by a standard distance between said control earth station and said standard position of the satellite;

second detecting means coupled to said measuring means and said standard delay providing means for detecting a

time deviation resulting from said spatial deviation of the satellite, with reference to said time difference and said standard delay time; and

varying means coupled to said second detecting means and said standard delay providing means for varying said reception time instant for the local earth station with reference to said standard delay time and said time deviation.

4,800,561

SYNCHRONIZATION BURST TRANSMIT PHASE CONTROL SYSTEM

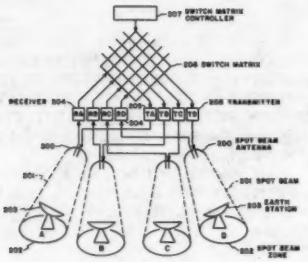
Yuuhei Ishi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 20, 1987, Ser. No. 87,662

Claims priority, application Japan, Aug. 27, 1986, 61-199038

Int. Cl.[4] H04J *3/06*

U.S. Cl. 370—104 **8 Claims**



1. In an SS/TDMA (Satellite-Switched Time Division Multiple Access) communications system having at least one uplink and one down-link which include a plurality of spot beams, the up- and down-links being sequentially switched according to a predetermined connection mode by a satellite born switch, and the switching of the connection being repeated at a predetermined frame period according to a timing reference provided in a satellite;

a sync burst transmit phase control system in which a predetermined satellite communications reference station for establishing and maintaining a TDM frame between earth stations, which correspond to a plurality of different beam spot zones, comprises:

means for switching a metric pattern included in a predetermined sync burst which is transmitted to the satellite, said burst being based on a period corresponding to the TDMA frame and, then, said burst is returned from said satellite after being gated off by a sync window which is generated on a basis of a reference time in said satellite and adapted for regulation of the TDMA frame;

means responsive to a synchronization control operation performed by using a first metric pattern for determining a synchronization accuracy which is obtainable with the first metric pattern by averaging transmit phase correction values, which are necessary for maintaining synchronization, over a predetermined period of time;

means responsive to a synchronization control operation performed by using a second metric pattern for determining a synchronization accuracy which is obtainable with the second metric pattern by averaging transmit phase corrections, which are necessary for maintaining synchronization, over a predetermined period of time; and

means for comparing the synchronization accuracy with a predetermined synchronization accuracy at a predetermined period;

whereby any of the metric patterns is selected which provides a highest synchronization accuracy at a particular moment.

4,800,562

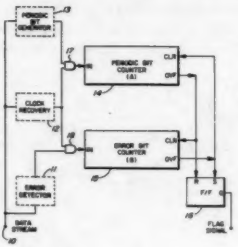
CIRCUIT AND METHOD FOR MONITORING THE QUALITY OF DATA IN A DATA STREAM

Gregory F. Hicks, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Apr. 27, 1987, Ser. No. 43,273

Int. Cl.[4] G06F *11/00*

U.S. Cl. 371—5 **9 Claims**



1. An event ratio detector circuit comprising a first counter means having a predetermined maximum count and being responsive to each event of a first sequence of events for increasing its count by one, and a second counter means having a predetermined maximum count and being responsive to each event of a second sequence of events for increasing its count by one, the overflow output of the first counter means being connected to the clear input of the second counter means, and the overflow output of the second counter means being connected to the clear input of the first counter means, a signal appearing at the overflow output of the second counter means indicating that the ratio of second events to first events as predetermined by the respective maximum counts of the second and first counter means has been exceeded.

4,800,563

ERROR PROCESSING METHOD AND APPARATUS FOR INFORMATION PROCESSING SYSTEM

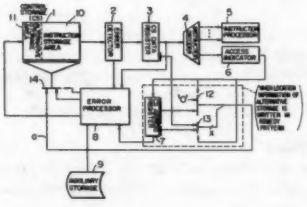
Teruo Itagaki, and Teruo Noro, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1986, Ser. No. 893,179

Claims priority, application Japan, Aug. 24, 1985, 60-186459

Int. Cl.[4] G06F *11/14, 11/16*

U.S. Cl. 371—13 **15 Claims**



10. An error processing apparatus for producing a corrected instruction word in an information processing system, comprising:

an instruction storage including a regular instruction storage area and an alternative instruction storage area for storing instruction words at respective addressable storage locations;

read means for producing an address of a selected storage location of said regular instruction storage area of said

instruction storage to read out an instruction word therefrom;

error detector means connected to receive a read-out instruction word from said instruction storage for detecting whether said read-out instruction word has a fixed error;

error processor means responsive to said error detector means detecting an erroneous instruction word for replacing said erroneous instruction word in said selected storage location of said regular instruction storage area with a particular pattern and for storing a corresponding correct instruction word into said alternative instruction storage area at a storage location therein which has an address identifiable from said selected storage location of said regular instruction storage area; and

decoder means connected to receive data read out of said instruction storage for detecting said particular pattern and for controlling said read means in response to said detecting to produce an address of said storage location in said alternative instruction storage area at which said corresponding correct instruction word is stored to read out said corresponding correct instruction word;

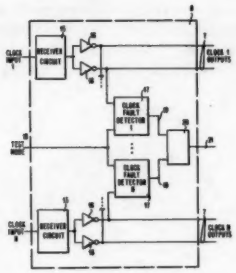
wherein said error processor means includes means responsive to said error detector means for determining the type of error of an erroneous instruction word and means for formulating said particular pattern in accordance with said type of error.

4,800,564

HIGH PERFORMANCE CLOCK SYSTEM ERROR DETECTION AND FAULT ISOLATION

John J. DeFazio, Pleasant Valley, and Timothy G. McNamara, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1986, Ser. No. 912,289
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—61 **13 Claims**



1. Apparatus for fault testing a clock distribution network which fans out a single-ended clock signal to a plurality of clock signal lines with said apparatus fault testing each of said plurality of clock signal lines for the presence of stuck-at-faults and missing and extra pulses, said apparatus including:

(a) a clock fault detection circuit for each of said plurality of said single-ended clock signal lines, said clock fault detection circuit having a first latch circuit means, said first latch circuit means having a data-in-port, a scan data-in-port with a predetermined one of said plurality of clock signal lines connected to said data-in-port and an output;

(b) invert delay circuit means, said invert delay circuit means having an input connected to said output of said first latch circuit and an output connected to the data-in-port of said first latch circuit means; and

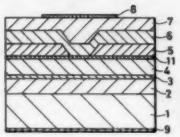
(c) an error collecting means, said error collecting means having a plurality of inputs, each of said plurality of inputs of said error collecting means connected to the output of a discrete one of said first latch circuits of said plurality of clock fault detector circuits, said error collecting means having an output for rendering an error signal if any one or more of said clock signals malfunctions.

4,800,565

SEMICONDUCTOR LASER DEVICE HAVING HIGH OPTICAL INTENSITY AND RELIABILITY

Misuzu Yoshizawa, Tokyo; Kazuhisa Uomi, Hachioji; Toshihiro Kawano, Ome; Yuichi Ono, and Takashi Kajimura, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1987, Ser. No. 94,602
Claims priority, application Japan, Sep. 16, 1986, 61-215717
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 **9 Claims**



1. A semiconductor laser device structure comprising:

a semiconductor region of first conductivity type;

a first cladding layer of said first conductivity type formed on said semiconductor region;

an active layer formed on said first cladding layer, said active layer having a larger refractive index than that of said first cladding layer and a smaller band gap than that of said first cladding layer;

a second cladding layer of a second conductivity type, different from said first conductivity type, formed on said active layer, said second cladding layer containing Al as a constituent atom, and having a smaller refractive index than that of said active layer and a larger band gap than that of said active layer;

an interface layer of said second conductivity type formed on said second cladding layer, said interface layer containing Al as a constituent atom;

a semiconductor layer formed on said interface layer, said semiconductor layer having a stripe shaped channel extending through said semiconductor layers so as to expose said interface layer and lying from one side to another side of a laser resonator in the direction of a laser beam;

a buried cladding layer of said second conductivity type buried at least in said stripe shaped channel, wherein said interface layer has a smaller Al mole ratio than that of said second cladding layer, and said buried cladding layer has a smaller refractive index than that of said second cladding layer; and

a pair of electrodes one of which is electrically coupled to said first cladding layer and the other to said buried cladding layer.

4,800,566

FUSION PUMPED LASER

Daniel S. Pappas, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

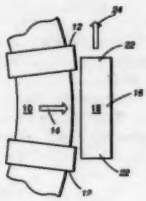
Filed Jul. 31, 1987, Ser. No. 79,961
Int. Cl.[4] H01S *3/09*; G21B *1/00*
U.S. Cl. 372—73 **4 Claims**

1. Apparatus for generating laser radiation, comprising:

tokamak fusion means for generating a long pulse of high-energy neutrons and having a temperature and magnetic field effective to generate a neutron flux of at least 10^{15} neutrons/cm^2-s;

conversion means adjacent said fusion means operable for

converting said high-energy neutrons to an energy source with an intensity and energy effective to excite a preselected lasing medium; and



said lasing medium responsive to said energy source to generate a population inversion effective to support laser oscillations for generating output radiation.

4,800,567

HIGH-FREQUENCY-DISCHARGE EXCITED GAS LASER

Norio Karube, Machida, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP87/00059, § 371 Date Sep. 28, 1987, § 102(e) Date Sep. 28, 1987, PCT Pub. No. WO87/04868, PCT Pub. Date Aug. 13, 1987

PCT Filed Jan. 28, 1987, Ser. No. 117,149

Claims priority, application Japan, Jan. 29, 1986, 61-15594; Jan. 29, 1986, 61-15596

Int. Cl.[4] H01S *3/097*

U.S. Cl. 372—87 **20 Claims**

1. A high-frequency-discharge excited gas laser adapted to excite a laser gas by means of a high frequency voltage applied from a high frequency power source to metallic electrodes disposed within a stream of laser gas, comprising:

metallic electrodes disposed within the stream of laser gas, at least one of said metallic electrodes being formed into a tubular shape;

a tubular covering body made of dielectric material having a ballast effect for establishing a uniform electric discharge, said covering body being disposed to be detached from an outer peripheral surface of said at least one metallic electrode and to cover said outer peripheral surface of said at least one metallic electrode, to permit a difference between thermal properties of said covering body and thermal properties of said at least one metallic electrode, said covering body having walls with a thickness which is sufficient to prevent pinholes from being produced during manufacture of said covering body and to prevent occurrences of dielectric breakdown of said covering body during use.

4,800,568

GAS LASER WITH A FREQUENCY-SELECTIVE DIELECTRIC LAYER SYSTEM

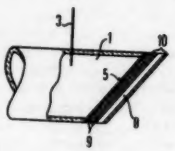
Hans Krueger, Munich, Fed. Rep. of Germany, and Hans P. Good, Sargans, Switzerland, assignors to Siemens Aktiengesellschaft & Balzers Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 29, 1986, Ser. No. 823,641

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1985, 3503092

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—99 **9 Claims**



1. In a gas laser having a discharge tube provided with a Brewster window adjacent at least one of its two opposite ends through which laser radiation is emitted, an improvement comprising means for allowing passage of only one wavelength and absorbing all others, said means being a frequency selective layer system being formed on the Brewster window, said system comprising:

a plurality of successive layers, said plurality of layers including only two layer types and including alternating high refractive index first layers and low refractive index second layers, each of said first layers having substantially a first optical thickness and each of said second layers having substantially a second optical thickness, said plurality of successive layers including between five and nine layers of each of said first layers and of each of said second layers, each of said first layers having an optical thickness of at least $0.98d_1$ and at most $1.02d_1$, where d_1 is a constant and is at least

$$0.8\left(\frac{2q+1}{4}\right)\lambda$$

and at most

$$1.2\left(\frac{2q+1}{4}\right)\lambda$$

and each of said second layers having an optical thickness of at least $0.98d_2$ and at most $1.02d_2$, where d_2 is a constant and is at least

$$0.8\left(\frac{2q+1}{4}\right)\lambda$$

and at most

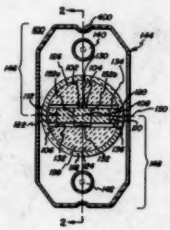
$$1.2\left(\frac{2q+1}{4}\right)\lambda,$$

where λ is a wavelength of a desired laser emission and q is a positive whole number.

4,800,569
REFLECTOR DESIGN FOR A SLAB LASER

Farzin H. Azad, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1987, Ser. No. 127,028
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—99 7 Claims



1. A method for determining a shape of reflector in a slab laser including a solid-state lasing medium having as generally rectangular shape with two opposing major face surfaces, said slab laser including a first and a second optical pumping lamp respectively disposed adjacent said lasing medium face surfaces for impinging electromagnetic radiation thereon and further including cooling means for flowing a fluid coolant across at least a portion of said lasing medium, said lasing medium exhibiting a negative focal power lens effect in lateral edge portions thereof, said reflector being positioned to generally direct the electromagnetic radiation form said first and second pumping lamps onto said lasing medium face surfaces and having a shape effective to introduce a positive focal power lens effect approximately equal in magnitude to said negative focal power lens effect into a central portion of said lasing medium between said lasing medium lateral edge portions, the last recited positive and negative lens effects representing desired lens effect distribution across a width dimension of said lasing medium, said method comprising the steps of:

(a) computing amounts of pumping energy absorbed in said lasing medium, as a function of width position, effective to produce a temperature distribution in said lasing medium which in turn produces said desired lens effect distribution, the amounts of absorbed pumping energy so computed corresponding to a desired pumping profile;

(b) assigning a predetermined initial set of values to a predetermined set of reflector dimensional parameters descriptive of the shape of said reflector, said initial values defining a current reflector shape;

(c) computing by ray tracing, based on the current reflector shape, a computed pumping profile corresponding to amounts of pumping energy absorbed in said lasing medium as a function of width position;

(d) computing a value of a predetermined error function that expresses a deviation of said computed pumping profile from said desired pumping profile;

(e) comparing the value of said error function computed in step (d) with a predetermined minimum value of said error function which represents an acceptable correspondence between said computed and desired pumping profiles and if said computed value is greater than the predetermined minimum value of said error function proceeding to step (f) and, if not, to step (g);

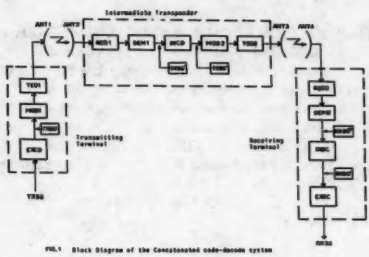
(f) updating the values assigned to said reflector dimensional parameters in accordance with a numerical minimization technique to minimize said error function and repeating steps (c) through (e) with the updated reflector dimensional parameters defining the current reflector shape; and

(g) stopping the method since the computed pumping profile resulting from the current reflector shape is sufficiently similar to said desired pumping profile that said desired lens effect distribution is substantially produced.

4,800,570
CONCATENATED CODE-DECODE SYSTEM FOR THE PROTECTION AGAINST INTERFERENCE OF DIGITAL TRANSMISSIONS THROUGH AN INTERMEDIATE REGENERATIVE REPEATER

Giorgio Perrotta, and Giacinto Losquadro, both of Rome, Italy, assignors to Selenia Spazio S.p.A., L'Aquila, Italy

Filed Apr. 30, 1987, Ser. No. 44,888
Claims priority, application Italy, May 15, 1986, 48024 A/86
Int. Cl.[4] H03K 11/00
U.S. Cl. 375—4 15 Claims



1. A concatenated code-decode system for protecting data transmissions effected through a transponder from interference, said system comprising:

(a) a transmitter terminal having (i) means for encoding a data signal with an external code, thereby producing an external coded signal, and (ii) means for transmitting said external coded signal;

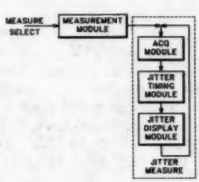
(b) a transponder having (i) means for receiving the transmitted external coded signal, (ii) means for encoding the received external coded signal with an internal code, thereby producing an internal coded signal, and (iii) means for transmitting said internal coded signal; and

(c) a receiving terminal having (i) means for receiving the transmitted internal coded signal, (ii) means for decoding the received internal coded signal, thereby producing a coded signal corresponding to said external coded signal, and (iii) means for decoding said coded signal corresponding to said external coded signal, thereby producing a signal corresponding to said data signal.

4,800,571
TIMING JITTER MEASUREMENT DISPLAY

Tomoo Konishi, Yokohama, Japan, assignor to Tektronix, Inc., Beaverton, Oreg. and Sony-Tektronix, Inc., Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 142,092
Int. Cl.[4] H04B 3/46
U.S. Cl. 375—10 8 Claims



1. A method for displaying timing pulse jitter of an input signal having a timing pulse occurring at a nominal repetitive rate comprising the steps of:

acquiring from the input signal a set of digitized data samples using a free running, stable, precision clock;

selecting from the set of digitized data samples a predetermined number of samples about a timing pulse data sample corresponding approximately to a specified point on the timing pulse for each timing interval between timing pulses of the input signal;

determining a precise timing point corresponding to the specified point from the selected data samples for each timing interval with respect to a stable reference point established by the precision clock; and

displaying the timing point for each timing interval as a function of a difference between the timing point and the stable reference point.

4,800,572

ADAPTER FREQUENCY RANGE EQUALIZER FOR DIGITAL RADIO RELAY SYSTEMS

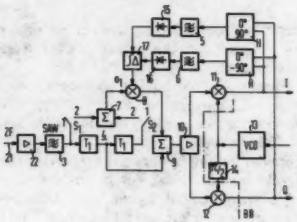
Josef A. Nossek, Iffeldorf; Georg Sebald; Berthold Lankl, both of Munich, and Klaus Boshold, Kaufering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 31, 1987, Ser. No. 91,020

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637051

Int. Cl.[4] H04B *3/04*

U.S. Cl. 375—14 **7 Claims**



1. An adaptive frequency range equalizer for a digital radio relay systems (DRS) in which an intermedate frequency band (ZF), there is provided a transversal filter (4) which has adjustable coefficients (a_n+jb_n, n from $-N$ to $+N$) and which has means for spectrum analysis for setting the coefficients wherein coefficients (a_n+jb_n) determine the transmission function of the transversal filter (4) so that it can be the minimum-phase type (mp), linear-phase type (lp) or non-minimum-phase type (nmp), wherein the criteria for setting the coefficients (a_n+jb_n) of the transversal filter (4) are obtained from an in-phase base-band signal (I) and from a 90 degree signal (Q), a pair of hybrids (M) which receive said in-phase base-band signal (I) and said 90 degree signal (Q), a pair of filter probes (5, 6) connected to receive the outputs of said pair of hybrids (H) and a difference integrator connected to receive the outputs of said pair of filter probes.

4,800,573

EQUALIZATION ARRANGEMENT

Robert L. Cupo, Eatontown, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Nov. 19, 1987, Ser. No. 122,812

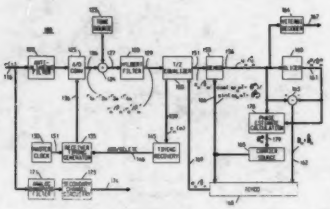
Int. Cl.[4] H04B *3/04*; H04J *1/14*

U.S. Cl. 375—14 **8 Claims**

3. Apparatus comprising

means for receiving a signal transmitted to said apparatus over a communication channel, the transmitted signal being comprised of first and second frequency multiplexed signals, the energy in said first frequency multiplexed signal representing a stream of data,

means for forming samples of the received signal at a rate less than the Nyquist frequency associated with said transmitted signal, said samples containing substantial energy from both of said first and second frequency multiplexed signals,



a fractionally-spaced equalizer for generating an equalized signal in response to said samples, and

means for forming, in response to said equalized signal, decisions as to the value of said data, said equalizer updating its transfer function in response to said equalized signal and said decisions.

4,800,574

DIGITAL MODULATOR/DEMODULATOR INCLUDING NON-LINEAR ANALOG-TO-DIGITAL CONVERTER AND CIRCUITRY COMPENSATING FOR THE NON-LINEARITY OF THE CONVERTER

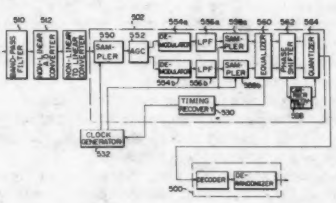
Shigetaka Tanaka; Toshiaki Tanigawa, both of Atsugi, and Mitsuru Kaga, Hatano, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 7, 1984, Ser. No. 609,405

Claims priority, application Japan, May 10, 1983, 58-80145; Jun. 2, 1983, 58-96915; Jun. 3, 1983, 58-98033

Int. Cl.[4] H04B *14/04*

U.S. Cl. 375—26 **" Claims**



1. A digital demodulator for demodulating an analog transmission signal on a line and converting the analog transmission signal to a linear digital signal, comprising:

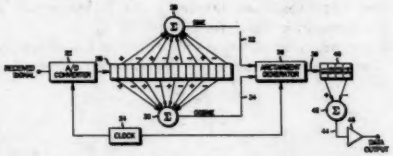
an analog-to-digital converter having a non-linear conversion characteristic which produces an output digital signal having a first predetermined number of bits non-linearly relative to the input analog transmission signal; and

compensation means having a non-linear conversion characteristic which converts the non-linear digital signal output from the analog-to-digital converter into said linear digital signal having a second predetermined number of bits which is larger than the first predetermined number of bits.

4,800,575
MODEM FSK DEMODULATION METHOD AND APPARATUS

Steven L. Anderson, Huntsville, Ala., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1987, Ser. No. 91,479
Int. Cl.[4] H04L 27/14
U.S. Cl. 375—80 6 Claims



1. In a demodulator which receives data transmitted using frequency shift keying (FSK) modulation using mark and space tones having first and second frequencies, respectively, a method for demodulating said data comprising the steps of:

generating a clock reference having a third frequency which is approximately equal to one half of the sum of said first frequency and said second frequency;

converting said received tones into digital words;

calculating the phase of each of said words relative to the phase of said clock reference;

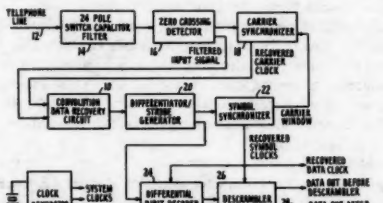
storing said calculated phase of each data word for a predetermined number of words;

determining the difference between one and another of said predetermined number of stored words, the number of words between said one and another selected such that a phase difference of +45 to +135 degrees exists when one of said mark and space tones is being received and a phase difference of −45 to −135 degrees exists when the other of said mark and space tones is being received, the polarity of said phase difference between said one and another of the predetermined number of words being determinative of whether a mark or space is received.

4,800,576
CONVOLUTION DATA RECOVERY CIRCUIT

Hee Wong, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 4, 1987, Ser. No. 21,407
Int. Cl.[4] H04L 27/22
U.S. Cl. 375—83 9 Claims



1. A data recovery circuit of the type utilized in a receiver circuit to generate decoded data signals from an incoming signal which comprises a phase modulated carrier signal, the data recovery circuit comprising:

(a) means for converting the incoming signal to a corresponding binary signal;

(b) means for recovering a carrier clock signal from the incoming signal, the carrier clock having a frequency greater than that of the incoming signal;

(c) a shift register which responds to the carrier clock signal to provide an array of phase vectors based on the binary signal which is shifted into the shift register;

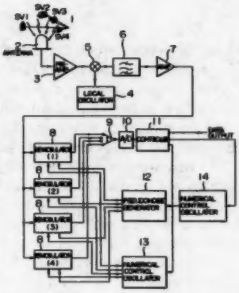
(d) means for convoluting the phase vectors against a weighting curve to generate a weighted output; and

(e) means for removing the phase of the carrier signal from the weighted output to generate a decoded data signal representative of the difference between the phase of the incoming signal and the phase of the carrier signal.

4,800,577
GPS RECEIVER

Ryobun Tachita, Kawasaki; Ken Ikeda, Musashino, and Akio Teranishi, Ebina, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 6, 1987, Ser. No. 78,247
Claims priority, application Japan, Jul. 7, 1986, 61-159048; Jul. 7, 1986, 61-159054
Int. Cl.[4] H04L 7/10
U.S. Cl. 375—115 11 Claims



1. A GPS receiver comprising:

pseudonoise generator means for simultaneously generating pseudonoise signals respectively corresponding to satellite electromagnetic waves transmitted from two or more satellites;

oscillator means for simultaneously regenerating carrier waves of the plurality of satellite electromagnetic waves; and

a plurality of demodulator means responsive to said regenerated carrier waves and said pseudonoise signals to demodulate individual satellite electromagnetic waves independently, to thereby regenerate data transmitted from individual satellites;

each demodulator means being operative, during demodulation, to detect a set of phases of one pseudonoise signal and one regenerated carrier wave relative to one satellite electromagnetic wave on time division basis and including a first mixer for mixing of one pseudonoise signal, a second mixer for mixing of one regenerated carrier wave and a filter, whereby a set of phases of one pseudonoise signal and one regenerated carrier wave is changed to another set at timed relationship with transmission of data from individual satellites to measure a phase of one pseudonoise signal relative to one satellite electromagnetic wave, thereby tracking data transmitted from individual satellites on the basis of the measured phase.

4,800,578

SYNCHRONIZING DETECTING CIRCUIT FOR A DIGITAL BROADCASTING RECEIVER

Kazuji Sasaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

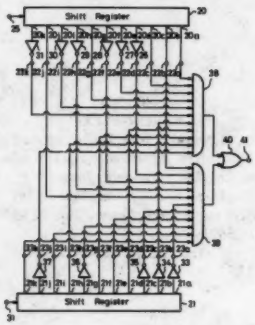
PCT No. PCT/JP86/00651, § 371 Date Aug. 27, 1986, § 102(e) Date Aug. 27, 1986, PCT Pub. No. WO87/04310, PCT Pub. Date Jul. 16, 1987

PCT Filed Dec. 25, 1986, Ser. No. 93,024

Claims priority, application Japan, Dec. 28, 1985, 60-297333

Int. Cl.[4] H04C *7/00*

U.S. Cl. 375—116 5 Claims



1. A synchronizing detecting circuit for a digital broadcasting receiver characterized by first and second serial-to-parallel converting means for converting serial sync. word signals of first and second series derived from an output of a demodulator into first and second parallel sync. word signals, respectively, first and second inverting means for making all bits of said first and second parallel sync. word signals derived at outputs of said first and second serial-to-parallel converting means high in level when said sync. word signals are supplied thereto, and judging means for re-arranging respective bits of even-numbered bits (or odd-numbered bits) of said first and second parallel digital data derived at outputs of said first and second means into sync. word signals of first and second groups and for judging said bits as a sync. word when all the bits of at least one of said sync. word signals of said first and second groups are at high level.

4,800,579

CHARGE TRANSFER DEVICE PROVIDED WITH CHARGE DETECTION CIRCUIT OF A FLOATING GATE SYSTEM

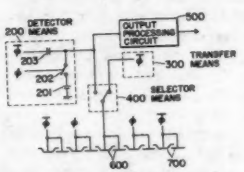
Shin-ichi Imai, and Naoki Hosoya, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1987, Ser. No. 31,456

Claims priority, application Japan, Mar. 31, 1986, 61-73495

Int. Cl.[4] G11C *19/28;* H01L *29/78*

U.S. Cl. 377—60 5 Claims



1. A charge transfer device comprising:
a charge transfer path;
a plurality of transfer electrodes provided on said charge transfer path;
a read electrode provided on said charge transfer path;
clock means for delivering a clock signal to said transfer electrodes to effect transfer on said charge transfer path;
detector means for detecting signal components of a charge below said read electrode without affecting a charge transferred on said charge transfer path;
transfer means for delivering a predetermined signal to said read electrode, thus allowing a charge below said read electrode to be transferred; and
selector means for allowing only either said detector means or said transfer means to be operative for said read electrode.

4,800,580

X-RAY ANALYSIS APPARATUS

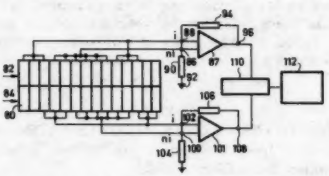
Eliberthus Houtman, Almelo, and Geert Brouwer, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 573,244, Jan. 23, 1984. This application Oct. 20, 1986, Ser. No. 921,861

Claims priority, application Netherlands, Feb. 4, 1983, 8300419

Int. Cl.[4] G01N *23/20*

U.S. Cl. 378—71 21 Claims



1. An X-ray analysis apparatus comprising
an X-ray diffractometer comprising:
X-ray source means for producing X-rays,
a specimen to be examined being irradiated by said X-rays,
detector means for detecting X-radiation emanating from said specimen, said detector means including a plurality of detector elements, each of said detector elements being a composite photodiode-semiconductor detector element for directly measuring photocurrent produced by said X-radiation, and
signal reading means receiving signals from said composite photodiode-semiconductor detector elements for reading said signals, said composite photodiode-semiconductor detector elements being connected to said signal reading means in either a separate connection from each of said composite photodiode-semiconductor detector elements to said signal reading means or a connection of groups of said composite photodiode-semiconductor detector elements connected to said signal reading means,
wherein said composite photodiode-semiconductor detector elements have a resolution determined by detection entrance widths of said composite photodiode-semiconductor detector elements, and
wherein adjacent ones of said detector elements are joined to determine said entrance widths.

4,800,581

X-RAY TUBE

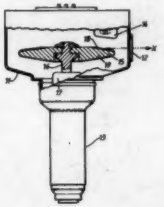
Masaji Kujirai, Ohtawara, and Yoshio Fukuhara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1987, Ser. No. 111,255

Claims priority, application Japan, Oct. 27, 1986, 61-255147; Oct. 27, 1986, 61-255148

Int. Cl.[4] H01J *35/08*

U.S. Cl. 378—143 **8 Claims**



1. An X-ray tube comprising:

cathode means for emitting electrons; and

target means for radiating primarily characteristic X-rays of molybdenum, including an electron focal area thereon for bombardment by the emitted electrons,

the electron focal area including a molybdenum base alloy containing at least one of titanium and potassium oxide-silicon dioxide.

4,800,582

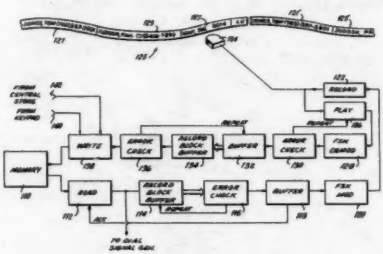
METHOD AND APPARATUS FOR CREATING AND STORING TELEPHONE DIRECTORY LISTINGS

Nicholas A. D'Agosto, III, Trumbull, Conn.; Steven M. Smith, Mahopac, N.Y., and Emil F. Jachmann, Greenwich, Conn., assignors to Dictaphone Corporation, Stratford, Conn.

Filed Aug. 8, 1986, Ser. No. 895,001

Int. Cl.[4] H04M *1/27*

U.S. Cl. 379—216 **50 Claims**



1. Automatic telephone dialing apparatus for dialing telephone numbers represented by telephone number information stored therein, comprising:

memory means for selectively and alterably storing a plurality of items of said telephone number

selection means for selecting one of said items from said memory means;

display means responsive to said selection means an said memory means for displaying at least a portion of said selected item;

read out means for responsive to said selection means said memory means, and a user input to read out from said memory means at least portion of said selected item corresponding to a telephone number and for effecting a dial-out operation for said corresponding telephone number;

playback means for playing back from a record medium a selected plurality of items of telephone number information; and,

write means for writing said selected plurality of items into said memory means, whereby a previously selected plurality of stored items may be altered.

4,800,583

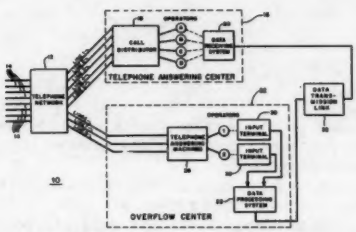
OVERFLOW CALL HANDLING SYSTEM

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050-9621

Continuation-in-part of Ser. No. 892,196, Jul. 31, 1986, abandoned. This application Aug. 22, 1986, Ser. No. 899,538

Int. Cl.[4] H04M *1/57, 3/50*; H04Q *3/64*

U.S. Cl. 379—67 **21 Claims**



13. A telephone answering system for handling overflow calls from a telephone answering center of the type which comprises at least one operator station and means for interconnecting the operator station with a telephone line, said system comprising:

an overflow station;

means for automatically diverting overflow calls on the telephone line from the telephone answering center to the overflow station;

means, located at the overflow station, for automatically answering the overflow calls and automatically recording caller responses from individual overflow callers, and for allowing said recorded caller responses to be transcribed;

means, located at the overflow station, for digitally encoding information obtained from transcribed ones of said caller responses;

means for transmitting said digitally encoded information from the overflow station to a selected telephone center, remote from the overflow center; and

means for receiving said digitally encoded information at the selected telephone center.

4,800,584

INDEX DEVICE FOR AUTOMATIC INFORMATION RETRIEVAL

Ryoji Kitanishi, Tokyo, Japan, assignor to Tandy Electronics Japan, Ltd., Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,551

Claims priority, application Japan, Sep. 19, 1986, 61-143731[U]

Int. Cl.[4] H04M *1/27*

U.S. Cl. 379—355 **2 Claims**

1. An indexing device for providing signals identifying the address in a memory device of stored information corresponding to any selected index entry, comprising

(a) a housing having a plurality of index cards therein,

(b) A movable cover having a closed position in which it covers the index cards in the housing,

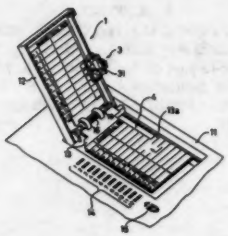
(c) a carriage movably mounted on the cover,

(d) an indicator pivotally mounted on the carriage and ar-

ranged to be selectively brought into alignment with indicia on the cover by movement of the carriage,

(e) a position sensor disposed in the housing and extending along the path of movement of the carriage for detecting the position of the indicator,

(f) means carried by the indicator for enabling the position sensor to detect the position of the indicator at stations along the indicator's path of movement,



(g) signal generating means coupled to the position sensor for generating a signal identifying the station at which the indicator is positioned,

(h) latch means carried by the pivoted indicator for latching the cover in its closed position, and

(i) a latch retainer disposed in and secured to the housing and situated to engage the latch means carried by the pivoted indicator.

4,800,585

SATURATING BIPOLAR SWITCH CIRCUIT FOR TELEPHONE DIAL PULSING

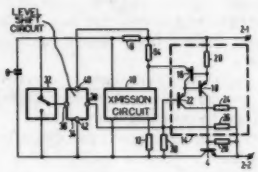
Hendricus A. H. Dorland, Hilversum, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jul. 6, 1987, Ser. No. 69,686

Claims priority, application Netherlands, Jul. 8, 1986, 8601773

Int. Cl.[4] H04M *1/30*

U.S. Cl. 379—364 **5 Claims**



1. A telephone set dial pulsing circuit for connection to the two terminals of a subscriber line to provide pulsed interruptions of the subscriber line current, comprising a bipolar switching transistor whose main current path is situated between one of such line terminals and the remaining circuit elements of the telephone set and whose emitter is connected to the aforesaid one line terminal; the improvement characterized in that such dial pulsing circuit comprises a control circuit connected to a controllable current source having a control input and an output which is connected to the base of the switching transistor, the output current of the current source increasing with the line current under control of the control circuit; such control circuit comprises converter means for producing a control voltage proportional to the line current; and the controllable current source is a voltage-controlled current source which is controlled by the control voltage applied to its control input by the converter means.

4,800,586

COMPENSATION CIRCUIT FOR USE WITH AN INTEGRATING AMPLIFIER

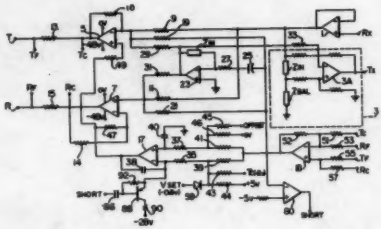
Rolf Meier, Nepean, Canada, assignor to Mitel Corporation, Canada

Filed Feb. 19, 1988, Ser. No. 157,862

Claims priority, application Canada, Mar. 10, 1987, 531660

Int. Cl.[4] H04M *1/74*

U.S. Cl. 379—399 **5 Claims**



1. In a constant current line circuit including tip and ring lead differential driver circuits for generating nominal tip and ring lead battery voltages, and a DC control circuit comprised of amplifier means and integrating capacitor means connected thereacross for monitoring DC voltages carried by said tip and ring leads and in response maintaining DC current flowing in said tip and ring leads at a constant level; the improvement comprising compensation means for detecting a sudden increase in impedance connected to said tip and ring leads and in response momentarily discharging said integrating capacitor mean, thereby increasing responsiveness of said DC control circuit in the event of said sudden increase in impedance connected to said tip and ring leads.

4,800,587

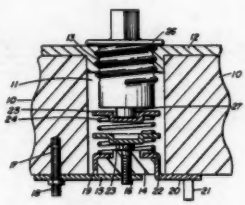
TELEPHONE LINE PROTECTOR WITH LINE DISCONNECT AND AN ENTRANCE TERMINAL ASSEMBLY INCORPORATING A PLURALITY OF PROTECTORS

Albert Kupferschmidt, Highland Park, Ill., assignor to Northern Telecom Limited, Montreal, Canada

Filed May 11, 1987, Ser. No. 47,464

Int. Cl.[4] H02H *3/22*

U.S. Cl. 379—437 **6 Claims**



1. A telephone line protector housing comprising:

a housing defining a well having front and back ends;

a ground connection at said front end, said ground connection at said front end including a threaded bore for reception of a threaded protector module into said well;

a cable conductor attachment and a line conductor attachment each connected to the housing;

a first member in said well, said first member being adjacent to and spring biased away from said back end;

a second member in said well, said second member being adjacent to and spring biased away from said first mem-

ber, the spring bias on the second member being stronger than the spring bias on the first member;

means for connecting a line conductor to said first and second members via said line conductor attachment; and

means for connecting a cable conductor to said first member via said cable conductor attachment,

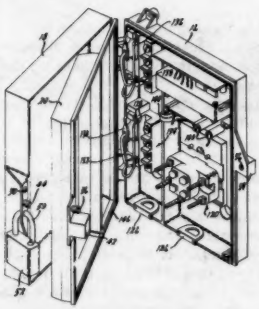
whereby, upon initial insertion of said protector module, said module contacts and moves said second member which sequentially moves said first member into contact with said means for connecting said cable conductor, and further insertion further moves said second member only.

4,800,588

TELEPHONE NETWORK INTERFACE SYSTEM

Thomas J. Poster, Jr., Clemens, Mich., assignor to GTE Products Corporation, Danvers, Mass.

Filed Aug. 7, 1985, Ser. No. 763,200
Int. Cl.[4] H04M *9/00*
U.S. Cl. 379—412 **57 Claims**



28. A network interface device for housing at least one telephone network interface unit and at least one telephone utility circuit component, the network interface device comprising:

a rear housing member having an interior partitioning wall defining first and second compartments;

a means for securing at least one telephone network interface unit within said first compartment;

a means for securing at least one telephone utility circuit component within said second compartment;

an inner cover member movable between an open position and a closed position, in said closed position said inner cover member preventing access to said second compartment;

an outer cover member of a size to substantially cover said inner cover member and movable between an open position and a closed position, in said closed position said outer cover member preventing access to said first compartment and to said inner cover member;

hinge means disposed on said rear housing for rotatably carrying both of said inner and outer cover members for movement about a common axis;

first and second securing means for securing said outer cover member to said inner cover member; and

threaded locking means for locking said inner cover member in said closed position, said locking means having a head portion accessible from the exterior of said device.

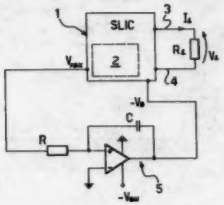
38. The device of claim **28** further comprising at least one bridging connector securable in said first compartment for manually disconnecting telephone service at said network interface.

4,800,589

VOLTAGE REGULATOR CONTROL CIRCUIT FOR A SUBSCRIBER LINE INTERFACE CIRCUIT

Marco Siligoni, Milan, and Vanni Poletto, Alessandria, both of Italy, assignors to SGS-Thomson Microelettronica S.p.A., Italy

Filed Oct. 16, 1987, Ser. No. 109,435
Claims priority, application Italy, Oct. 24, 1986, 22140-A/86
Int. Cl.[4] H04M *19/00*
U.S. Cl. 379—413 **9 Claims**



1. A control circuit for a voltage regulator in a subscriber line interface circuit which has output terminals connected to the subscriber line and having, in their steady-state condition, a so-called line current/line voltage characteristic described by a continuous straight segment function wherein a first segment at a steady current equal to the line peak or upper limit current (I_{LIM}) merges with a second sloping segment merging, in turn, with a third sloping segment, the gradients of said segments being dependent on the value of a bridge resistance (R_{DC}) in the interface circuit, and said characteristic depending on a supply voltage value (V_B) from said voltage regulator, characterized in that it comprises a first circuit portion connected to said interface circuit and having first (A) and second (B) inputs respectively connected to the bases of a transistor pair (T11, T12) in a differential cell effective to provide a voltage value proportional to the difference between said limit current (I_{LIM}) and said line current (I_L), to said second input (B) there being applied a voltage value proportional to said limit current (I_{LIM}) multiplied by the difference of a value of an apparent resistance (R'_{DC}) minus said bridge resistance (R_{DC}), and an output terminal (U) effectively providing a voltage value proportional to the difference between an optimum voltage (V_{BF}) to be applied to said interface circuit and said supply voltage (V_B) and being dependent on the voltage values appearing at said inputs.

4,800,590

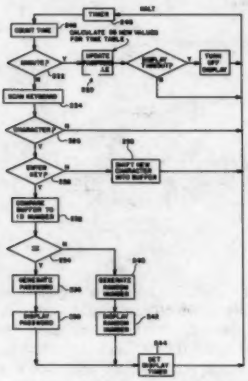
COMPUTER KEY AND COMPUTER LOCK SYSTEM

James C. Vaughan, Palo Alto, Calif., assignor to Willis E. Higgins, Palo Alto, Calif., a part interest

Filed Jan. 14, 1985, Ser. No. 691,225
Int. Cl.[4] H04K *1/00*; G07P *7/00*
U.S. Cl. 380—25 **10 Claims**

1. A system for remote access by a user to a computer, which comprises a plurality of password generators, each user having one of the password generators, an interface remotely accessible by the user and connected to said computer, means for loading equivalent information into one of the password generators and the interface for generation of the passwords, said interface and said password generators each including a clock, said interface and said password generators each including means for generating the same passwords from the equivalent information at corresponding clock time periods in said one password generator and said interface using the equivalent information and an input from said clock as data to generate the same passwords in said one password generator and said interface, with the passwords changing for each successive time period, said interface including means for comparing a transmitted password generated by said one password genera-

tor during the clock time period with a password generated by said interface during the clock time period, so that identity of the transmitted password generated by said one password generator during the clock time period with the password generated by said interface allows access to said computer through said interface, and for comparing the transmitted



password generated by said password generator with the changed passwords generated by said interface for a plurality of adjacent time periods in the absence of identity between the compared passwords generated by said one password generator and said interface, to compensate for non-coincidence of the clock time periods of generation of the compared passwords.

4,800,591

SIGNAL PROCESSING APPARATUS

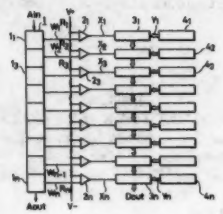
Yuichi Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 416,364, Sep. 9, 1982, abandoned. This application Jan. 6, 1987, Ser. No. 4,270

Claims priority, application Japan, Sep. 17, 1981, 56-146583; Sep. 21, 1981, 56-149278; Sep. 21, 1981, 56-149279

Int. Cl.[4] G06K *9/00*; H03M *1/42*

U.S. Cl. 382—50 **9 Claims**



1. A signal processing apparatus comprising:

(a) an analog shift register having plural addresses, for shifting input analog data without changing the input analog data to be shifted;

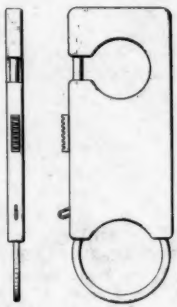
(b) plural discriminating means for comparing the levels of analog information in different addresses of said register respectively with predetermined reference levels; and

(c) a plurality of digital registers each arranged to correspond to a respective one of said plural discriminating means and each having first and second input terminals which respectively receive digital data associated with said reference levels and data contained in an adjacent one of said digital registers, and each of said digital registers, in response to an output from the corresponding one of said discriminating means, storing the data at either one of said first or second input terminals.

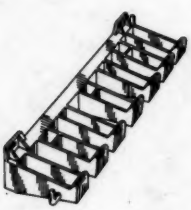
DESIGNS

JANUARY 24, 1989

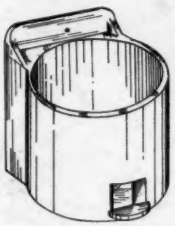
299,480
KEY-HOLDER
Rolando S. Harari, Av. Sernambetiba 3600 Bl. 3, Apt. 803, Rio de Janeiro, Brazil
Filed Jun. 19, 1984, Ser. No. 622,344
Claims priority, application Brazil, Dec. 19, 1983, MI 4301185
Term of patent 14 years
U.S. Cl. D3—61



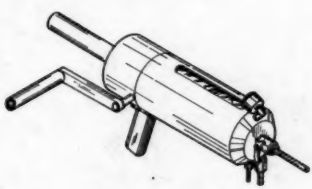
299,481
TOOL HOLDER
Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Jun. 26, 1986, Ser. No. 879,165
Term of patent 14 years
U.S. Cl. D6—569



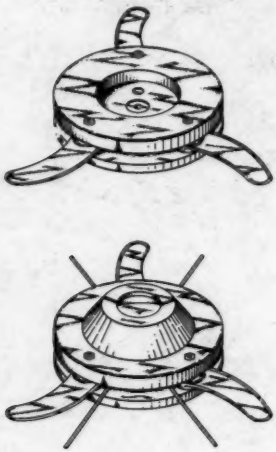
299,482
COMBINATION CUP, CAN 'N COIN HOLDER
Stanley W. Pearson, 1601 Cambridge Dr., Kinston, N.C. 28501
Continuation-in-part of Ser. No. 499,287, May 31, 1983, abandoned. This application Jan. 15, 1986, Ser. No. 818,958
Term of patent 14 years
U.S. Cl. D7—70



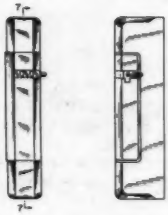
299,483
TREE INJECTOR
Jeremiah N. Hansen, Paso Robles, Calif., assignor to The Weed Works, Paso Robles, Calif.
Filed Apr. 16, 1986, Ser. No. 852,925
Term of patent 14 years
U.S. Cl. D8—1



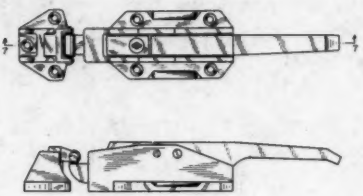
299,484
CUTTING ATTACHMENT FOR A LAWN AND WEED TRIMMER
Anthony L. Lee, P.O. Box 617, Walnut Grove, Calif. 95690
Filed Oct. 8, 1986, Ser. No. 916,671
Term of patent 14 years
U.S. Cl. D8—8



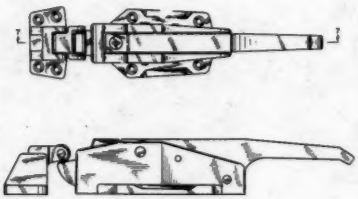
299,485
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,712
Term of patent 14 years
U.S. Cl. D8—323



299,486
LATCH FOR REFRIGERATOR DOOR
Yoshiaki Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,602
Term of patent 14 years
U.S. Cl. D8—341



299,487
LATCH FOR REFRIGERATOR DOOR
Yoshiaki Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,617
Term of patent 14 years
U.S. Cl. D8—341

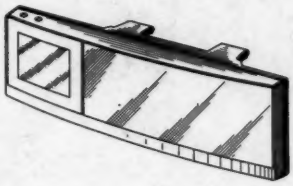


299,488
CONTAINER FOR KNITTING NEEDLES
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Oct. 17, 1985, Ser. No. 788,737
Term of patent 14 years
U.S. Cl. D9—307

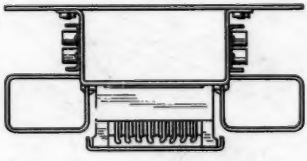
299,489
SOMBRERO RING
Nelson Wood, 20 Dean Rd., Brookline, Mass. 02146
Filed Nov. 26, 1986, Ser. No. 935,560
Term of patent 14 years
U.S. Cl. D11—30

299,490
TRAILER HITCH ALIGNMENT DEVICE
Mike Berg, P.O. Box 547, Bolen, N. Mex.; John Balko, 3621 Cardinal Dr., Sharpsville, Pa. 16150, and Alex Mervis , 206 Oakville Rd., Beaver Falls, Pa. 15010
Filed May 14, 1986, Ser. No. 863,398
Term of patent 14 years
U.S. Cl. D12—162

299,491
COMBINED VEHICLE REAR VIEW MIRROR AND TELEVISION
Masaru Masuda, Tokyo, Japan, assignor to Road Runner Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1986, Ser. No. 925,114
Claims priority, application Japan, Apr. 30, 1986, 61-16305
Term of patent 14 years
U.S. Cl. D12—188



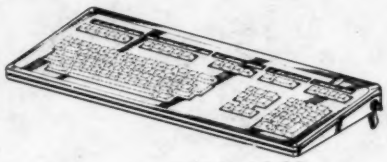
299,492
TELEPHONE VOICE TERMINATION BLOCK
Donald L. Gregson, Oxnard, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Mar. 14, 1986, Ser. No. 844,994
Term of patent 14 years
U.S. Cl. D14—240



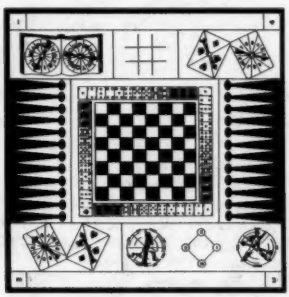
299,493
PORTABLE RADIO TELEPHONE
Katsuhito Watanabe, Tokyo, Japan, assignor to Oki Electric Industry Company, Ltd., Tokyo, Japan
Filed Jul. 14, 1986, Ser. No. 884,927
The portion of the term of this patent subsequent to Mar. 31, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—138

299,494
TELEPHONE EQUIPPED FACSIMILE
Hideo Tsuruoka, Chiba, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1986, Ser. No. 925,878
Claims priority, application Japan, May 6, 1986, 61-16503
Term of patent 14 years
U.S. Cl. D14—118

299,495
KEYBOARD
Robert G. Dickie, New Market, Canada, assignor to Northern Technologies, Ltd., Markham, Canada
Continuation-in-part of Ser. No. 711,933, Mar. 15, 1985. This application Feb. 18, 1986, Ser. No. 833,771
Term of patent 14 years
U.S. Cl. D14—100

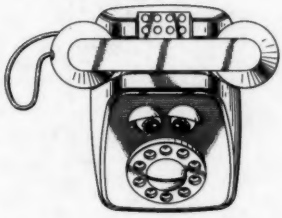


299,496
GAMEBOARD
Ben Reynolds, P.O. Box 152, Stoughton, Mass. 02072
Filed Aug. 22, 1985, Ser. No. 768,210
Term of patent 14 years
U.S. Cl. D21—24

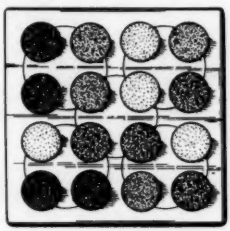


299,497
GAME DIE
Jean Reidenbach, 134, chemin Valmont, 1260 Nyon, and Hans Breitschmid, Avenue Blanc 48, 1202 Geneva, both of Switzerland
Filed Nov. 25, 1985, Ser. No. 806,359
Claims priority, application Hague, Jul. 23, 1985, DMA/000403
Term of patent 14 years
U.S. Cl. D21—41

299,498
TOY TELEPHONE
Tomoko Taninaka, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 6, 1987, Ser. No. 11,713
Claims priority, application Japan, Aug. 8, 1986, 61-31079
Term of patent 14 years
U.S. Cl. D21—111

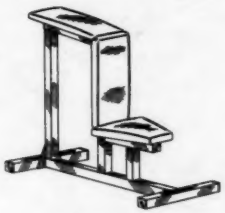


299,499
MANIPULABLE PUZZLE
Murray J. Gould, 11712 Silent Valley La., Gaithersburg, Md. 20878
Filed Sep. 14, 1987, Ser. No. 95,898
Term of patent 14 years
U.S. Cl. D21—104

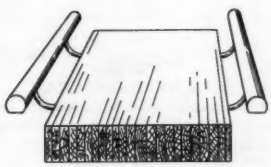


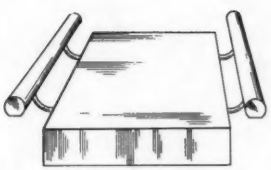
299,500
INFLATABLE WATER TOY
Daniel C. Geraci, P.O. Box 563, Pescadero, Calif. 94060
Filed Jun. 13, 1986, Ser. No. 874,364
Term of patent 14 years
U.S. Cl. D21—157

299,501
EXERCISE BENCH
Joseph K. Howze, P.O. Box 1574, Chula Vista, Calif. 92012
Filed Jul. 24, 1986, Ser. No. 889,009
Term of patent 14 years
U.S. Cl. D21—191

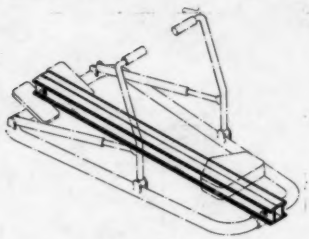


299,502
EXERCISE STAND
Donn S. Streiler, 1564 Arbuckle Dr., Chesterfield, Mo. 63017
Filed Nov. 12, 1985, Ser. No. 805,034
Term of patent 14 years
U.S. Cl. D21—191





299,503
MAIN BEAM FOR A ROWING MACHINE
Ronald A. McNeil, P.O. Box 1127, Havana, Fla. 32333
Filed Mar. 22, 1985, Ser. No. 714,723
Term of patent 14 years
U.S. Cl. D21—191



299,504
EXERCISE BICYCLE
Chue S. Hong, No. 4-2, Lane 63, Chin Hua N. Road, Pei Twen District, Taichung City, and Chin S. Chen, No. 30, Lane 229, Pao Tzu Keng Rd., Tai Ping Hsiang, Taichung Hsien, both of Taiwan
Filed Aug. 28, 1986, Ser. No. 901,467
Term of patent 14 years
U.S. Cl. D21—194

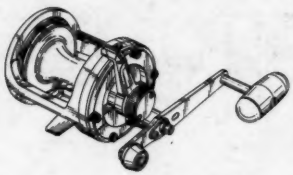
299,505
CLUB-HEAD FOR GOLF
Yukihiro Honma, Kawasaki, Japan, assignor to Kabushiki Kaisha Honma Gorufu Kurabu Seisakusho (Honma Golf Club Mfg., Co., Ltd.), Yokohama, Japan
Filed Jun. 3, 1985, Ser. No. 740,359
Claims priority, application Japan, Feb. 14, 1985, 60-5015
Term of patent 14 years
U.S. Cl. D21—220

299,506
DEFENSE FLASHER HOUSING
Robert J. Jensen, 16734 Nordhoff, Sepulveda, Calif. 91343
Filed Mar. 31, 1986, Ser. No. 847,557
Term of patent 14 years
U.S. Cl. D22—117

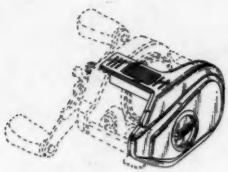
299,507
DEFENSIVE ELECTRIC SHOCK WEAPON
Mou Y. Hwa, No. 25, Lane 152, Kun Yang St., Nan Kang District, Taipei, Taiwan
Filed Aug. 7, 1985, Ser. No. 763,250
Term of patent 14 years
U.S. Cl. D22—117

299,508
FISHING LURE BODY
Edward M. Ashworth, 2332 Gearhart Rd., Troy, Ohio 45373
Filed Mar. 27, 1987, Ser. No. 32,194
Term of patent 14 years
U.S. Cl. D22—133

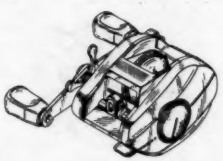
299,509
REEL FOR FISHING
Kanji Iinuma, and Yasuhisa Kameda, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Oct. 22, 1986, Ser. No. 922,138
Claims priority, application Japan, Apr. 24, 1986, 61-15451
Term of patent 14 years
U.S. Cl. D22—140



299,510
END CASING FOR A FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Oct. 22, 1986, Ser. No. 922,136
Claims priority, application Japan, Apr. 24, 1986, 61-15452
Term of patent 14 years
U.S. Cl. D22—140



299,511
REEL FOR FISHING
Yasuhisa Kameda, and Toshiaki Yoshikawa, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jun. 22, 1987, Ser. No. 64,455
Claims priority, application Japan, Dec. 26, 1986, 61-52046
Term of patent 14 years
U.S. Cl. D22—140



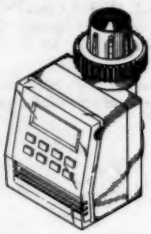
299,512
REEL FOR FISHING
Yasuhisa Kameda, Musashino, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 1, 1986, Ser. No. 881,178
Claims priority, application Japan, Jan. 7, 1986, 61-105
Term of patent 14 years
U.S. Cl. D22—141

299,513
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs; Casey J. Childre, and David B. Peed, both of Foley, all of Ala., assignors to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,473
Term of patent 14 years
U.S. Cl. D22—142

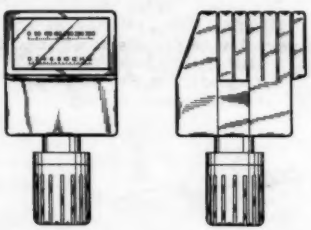
299,514
HANDLE FOR A FISHING ROD
James Andreasen, Eastgate Ave., Magnolia Springs, Ala. 36754, and Casey J. Childre, Rte. 3, Foley, Ala. 36535
Filed Mar. 17, 1986, Ser. No. 845,037
Term of patent 14 years
U.S. Cl. D22—142

299,515
FAUCET HANDLE
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 25, 1986, Ser. No. 902,327
Term of patent 14 years
U.S. Cl. D23—250

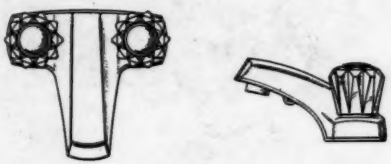
299,516
WATER FLOW CONTROL UNIT
Po-Hsiung Wang, No. 91, Kuo Tai Road, Chu Nan Chen, Miao Li Hsien, Taiwan, R.O.C., Taiwan
Filed Jan. 15, 1986, Ser. No. 818,976
Term of patent 14 years
U.S. Cl. D23—200



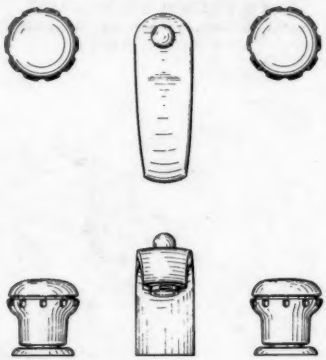
299,517
PRESSURE REDUCER
Jean-Louis Vigneau, Varilhes, France, assignor to Etablissements Duffour et Igon (D.I.), Toulouse, France
Filed May 24, 1985, Ser. No. 737,448
Claims priority, application France, Nov. 26, 1984, 84 5255
Term of patent 14 years
U.S. Cl. D23—235



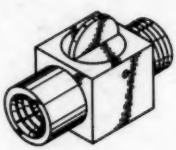
299,518
FAUCET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Division of Ser. No. 692,109, Jan. 17, 1985. This application May 21, 1987, Ser. No. 52,361
Term of patent 14 years
U.S. Cl. D23—241



299,519
FAUCET SET
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 25, 1986, Ser. No. 902,328
Term of patent 14 years
U.S. Cl. D23—242



299,520
GARDEN HOSE PROTECTION VALVE
Robert J. Pechler, 1166 NE. Ocean View Cir., Jensen Beach, Fla. 33457
Filed Jul. 25, 1985, Ser. No. 758,876
Term of patent 14 years
U.S. Cl. D23—245



299,521

DIAPHRAGM VALVE

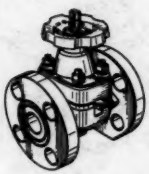
Yoshihiro Kiyota, and Toyoji Muratani, both of Saitama, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 738,208, May 28, 1985. This application May 20, 1988, Ser. No. 196,631

Claims priority, application Japan, Nov. 26, 1984, 59-48534; Nov. 26, 1984, 59-48536

Term of patent 14 years

U.S. Cl. D23—245



299,522

SUCTION ASSEMBLY FOR A WHIRLPOOL BATH

Philip E. Chalberg, 3441 Santa Clara Cir., Costa Mesa, Calif. 92626

Filed Mar. 6, 1985, Ser. No. 708,876

Term of patent 14 years

U.S. Cl. D23—261

299,523

SHOWER STALL

Placide Poulin, 251 Notre Dame, Tring Jonction, Beauce County, Quebec, Canada G0N 1X0

Filed Jun. 9, 1986, Ser. No. 872,442

Term of patent 14 years

U.S. Cl. D23—283

299,524

COMBINED AIR COOLER AND HEATER

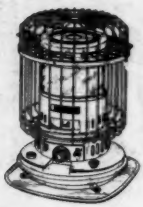
Chen Din-Her, No. 386, 8th Floor, Jen Ai Rd., Sec. 4, Taipei City, Taiwan

Filed Sep. 12, 1986, Ser. No. 907,753

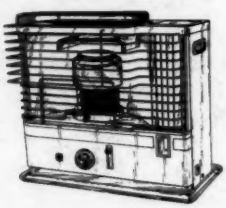
Term of patent 14 years

U.S. Cl. D23—314

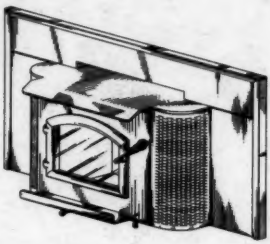
299,525
KEROSENE HEATER
Sadao Nasui, Machida, and Kazuyoshi Irisawa, Shibukawa, both of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan
Filed Jan. 2, 1986, Ser. No. 815,466
Claims priority, application Japan, Jul. 11, 1985, 60-29683; Aug. 15, 1985, 60-34731
Term of patent 14 years
U.S. Cl. D23—336



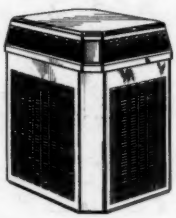
299,526
KEROSENE HEATER
Sadao Nasui, Machida, and Takeo Yajima, Tomioka, both of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan
Filed Jan. 2, 1986, Ser. No. 815,465
Claims priority, application Japan, Jul. 11, 1985, 60-29681
Term of patent 14 years
U.S. Cl. D23—338



299,527
FRONT FOR A FIREPLACE INSERT OR SIMILAR ARTICLE
Daniel S. Henry, Colville, Wash., assignor to Aladdin Steel Products, Inc., Colville, Wash.
Filed Jul. 24, 1987, Ser. No. 77,316
Term of patent 14 years
U.S. Cl. D23—344



299,528
OUTDOOR HEAT EXCHANGER CABINET FOR AN AIR CONDITIONING UNIT
Alan F. Kessler; David E. Bronaugh; James J. Watson, all of Tyler, Tex., and Stephen P. Bartlett, London, England, assignors to American Standard Inc., New York, N.Y.
Filed Jul. 21, 1986, Ser. No. 887,319
Term of patent 14 years
U.S. Cl. D23—351



299,529

DRAFT INTENSIFIER FOR A FIREPLACE CHIMNEY

James J. Best, P.O. Box 83, Henderson, Ark. 72544

Filed Oct. 16, 1986, Ser. No. 919,826

Term of patent 14 years

U.S. Cl. D23—373

299,530

CHIMNEY CAP

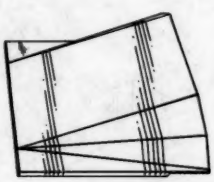
Tore Hansen, Gml. Flasebrekka, and Henrik Hansen, Slettebakkvn. 74B, both of N-5200 Os, Norway

Filed Aug. 18, 1986, Ser. No. 897,605

Claims priority, application Norway, Feb. 18, 1986, 67,025

Term of patent 14 years

U.S. Cl. D23—374



299,531

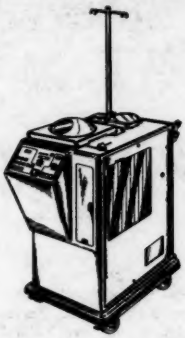
PATIENT PHOTOPHERESIS TREATMENT UNIT

Vernon H. Troutner, St. Petersburg, and Martin J. King, Seminole, both of Fla., assignors to McNeilab, Inc., Spring House, Pa.

Filed Feb. 27, 1986, Ser. No. 838,044

Term of patent 14 years

U.S. Cl. D24—1.1



299,532

DISPOSABLE VAGINAL SPECULUM

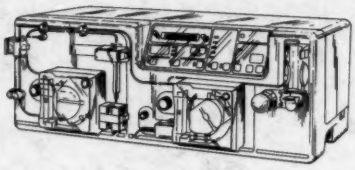
John Cecil, Jr., Skaneateles, and Robert R. Black, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jun. 19, 1986, Ser. No. 876,252

Term of patent 14 years

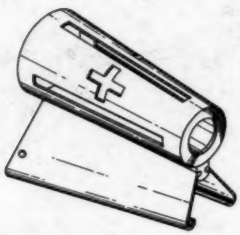
U.S. Cl. D24—18

299,533
BLOOD CIRCUIT FOR MONITORING AND CONTROLLING THE BLOOD FLOW DURING EXTRACORPOREAL BLOOD TREATMENT
Francesco Bianco, Modena, Italy, assignor to Hospal Ltd., Basel, Switzerland
Filed Apr. 25, 1985, Ser. No. 727,238
Claims priority, application Italy, Oct. 31, 1984, 53985/84[U]
Term of patent 14 years
U.S. Cl. D24—21



299,534
COMBINED PACIFIER COVER AND RETAINER
Daniel Mastropierro, 73 Clifton Ter., Weehawken, N.J. 07087
Filed Jun. 5, 1986, Ser. No. 873,211
Term of patent 14 years
U.S. Cl. D24—45

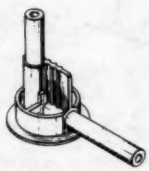
299,535
BABY BOTTLE SUPPORT
Carol James, 404 NW. Pleasant View Dr., Grants Pass, Oreg. 97526
Filed Apr. 28, 1986, Ser. No. 857,814
Term of patent 14 years
U.S. Cl. D24—48



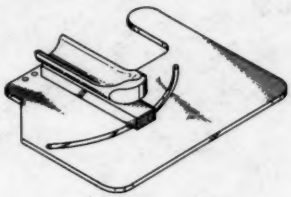
299,536
SURGICAL SUCTION WAND FOR TISSUE FAT
Noel Robbins, Chatham, N.J., assignor to Robbins Instruments Inc., Chatham, N.J.
Filed Jan. 29, 1986, Ser. No. 823,580
Term of patent 14 years
U.S. Cl. D24—51

299,537
BREAST PUMP
Yasuo Morifuji, Osaka, Japan, assignor to Jex Co., Ltd., Osaka, Japan
Filed Apr. 21, 1986, Ser. No. 856,145
Term of patent 14 years
U.S. Cl. D24—51

299,538
PRESSURE RESPONSIVE CHAMBER FOR MONITORING PRESSURE IN AN INFUSION SET
Alan S. Balding, Abington; Nigel F. Carter, Grove, Wantage; Paul F. Frampton, Virginia Water, and Vincent A. Rosso, Didcot, all of Great Britain, assignors to Vi-Tal Hospital Products, Ltd., Reading, England
Filed Oct. 29, 1985, Ser. No. 792,366
Claims priority, application United Kingdom, May 1, 1985, 1026554
Term of patent 14 years
U.S. Cl. D24—53

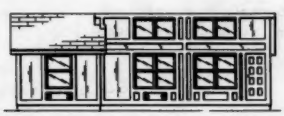


299,539
ARM EXTENSION BOARD FOR EXERCISING A DISABLED LIMB
Viva L. Kennedy, Rte. 5, Box 40, Jasper, Ala. 35501
Filed Apr. 28, 1986, Ser. No. 857,810
Term of patent 14 years
U.S. Cl. D24—64

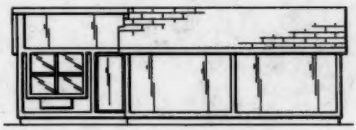


299,540
BUILDING
Sacha Sosno, 3, rue Bariellerie, 06300 Nice; Henri Vidal, 8 bis, Boulevard Maillot, 92200 Neuilly, and Yves Bayard, 44, rue Foch, 06480 La Colle sur Loup, all of France
Filed Nov. 22, 1985, Ser. No. 806,196
Term of patent 14 years
U.S. Cl. D25—5

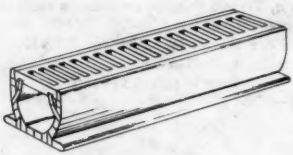
299,541
HOUSE
Lucien R. Downing, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Sep. 23, 1985, Ser. No. 778,927
Term of patent 14 years
U.S. Cl. D25—17



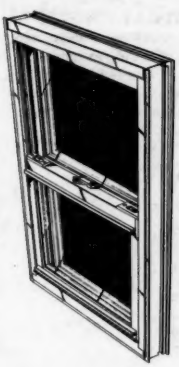
299,542
APARTMENT BUILDING OR SIMILAR ARTICLE
Monica P. Subtirelu, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Jul. 29, 1985, Ser. No. 760,140
Term of patent 14 years
U.S. Cl. D25—17



299,543
MODULAR DRAINAGE CHANNEL
Trevor Phillips, Westlake Village, Calif., assignor to National Diversified Sales, Inc., Newbury Park, Calif.
Filed Apr. 8, 1986, Ser. No. 849,423
Term of patent 14 years
U.S. Cl. D25—35

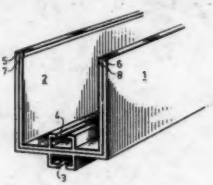


299,544
DOUBLE HUNG WINDOW
William A. Nolan, Louisville, Ky., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed May 7, 1986, Ser. No. 860,771
Term of patent 14 years
U.S. Cl. D25—52

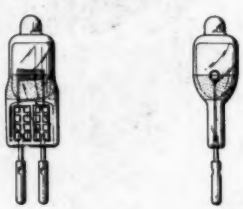


299,545
AWNING FRAME MEMBER
James Gandy, Brampton, Canada, assignor to Signtech Inc., Mississauga, Canada
Filed Jan. 28, 1986, Ser. No. 823,436
Claims priority, application Canada, Aug. 8, 1985, 08-08-8510
Term of patent 14 years
U.S. Cl. D25—57

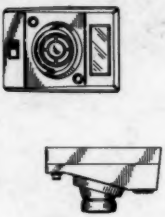
299,546
CHANNELS FOR A FILTER BANK SUPPORTING LATTICEWORK
Bertil Larmon, Tyresö, Sweden, assignor to Flakt AB, Stockholm, Sweden
Filed Jul. 23, 1985, Ser. No. 757,934
Claims priority, application Sweden, Jan. 29, 1985, 85-0205
Term of patent 14 years
U.S. Cl. D25—119



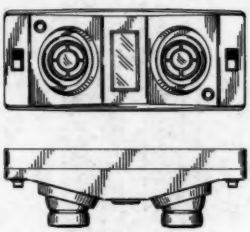
299,547
PARTIALLY FROSTED LAMP
Wayne R. Hellman, Oakwood Village, and Emmett H. Wiley, Chesterland, both of Ohio, assignors to Advanced Lighting International, Inc., Oakwood Village, Ohio
Filed Dec. 10, 1985, Ser. No. 807,182
Term of patent 14 years
U.S. Cl. D26—2



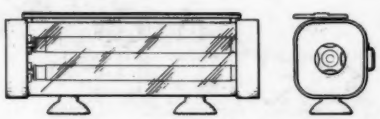
299,548
ADJUSTABLE LIGHT FOR THE INTERIOR OF AIRCRAFT, AUTOMOTIVE AND RECREATIONAL VEHICLES
Anthony Macaluso, 6833 Rosecrans Ave., Unit D, Paramount, Calif. 90723
Filed Oct. 24, 1986, Ser. No. 923,658
Term of patent 14 years
U.S. Cl. D26—29



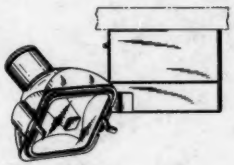
299,549
COMBINED COURTESY AND ADJUSTABLE LIGHT FOR THE INTERIOR OF AUTOMOTIVE VEHICLES
Anthony F. Macaluso, 6833 Rosecrans Ave., Unit D, Paramount, Calif. 90723
Filed Oct. 24, 1986, Ser. No. 923,659
Term of patent 14 years
U.S. Cl. D26—29



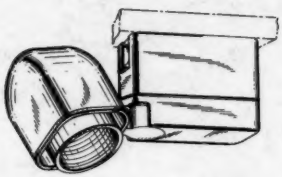
299,550
PORTABLE FLUORESCENT LIGHT
Duncan M. Payne, Fort Gibson, Okla., assignor to Optronics, Inc., Ft. Gibson, Okla.
Filed Dec. 6, 1985, Ser. No. 805,629
Term of patent 14 years
U.S. Cl. D26—42



299,551
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,129
Term of patent 14 years
U.S. Cl. D26—63

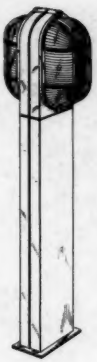


299,552
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,130
Term of patent 14 years
U.S. Cl. D26—63



299,553
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,131
Term of patent 14 years
U.S. Cl. D26—63

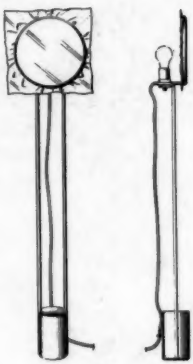
299,554
EXTERIOR POST LAMP
Henry Muller, Forest Hills, N.Y., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed May 1, 1986, Ser. No. 858,305
Term of patent 14 years
U.S. Cl. D26—69



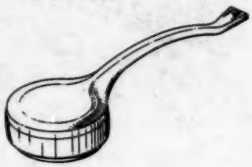
299,555
EXTERIOR POST LAMP
Henry Muller, Forest Hills, N.Y., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed May 1, 1986, Ser. No. 858,306
Term of patent 14 years
U.S. Cl. D26—69

299,556
ELECTRIC CANDLE
Cheryl Marshbanks, Wilson, N.C., assignor to Marshbanks, Inc., Wilson, N.C.
Filed Sep. 16, 1986, Ser. No. 907,891
Term of patent 14 years
U.S. Cl. D26—96

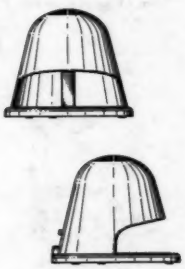
299,557
FLOOR LAMP
V. Lorenzo Porcelli, 225 Lafayette St., New York, N.Y. 10012
Filed Jan. 13, 1986, Ser. No. 818,339
Term of patent 14 years
U.S. Cl. D26—106



299,558
COMBINED BODY LOTION APPLICATOR AND COVER THEREFOR
Beverly M. Robison, P.O. Box 207, Carlew, Wash. 99118
Filed Jan. 20, 1987, Ser. No. 5,401
Term of patent 14 years
U.S. Cl. D28—7

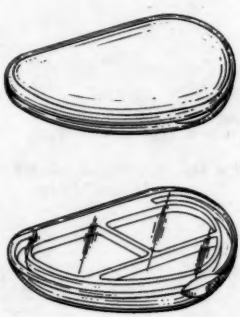


299,559
NAIL DRYER
Fu K. Wong, Kowloon, Hong Kong, assignor to Motor Electric Manufacturing Co., Ltd., Kowloon, Hong Kong
Filed Apr. 28, 1986, Ser. No. 858,227
Claims priority, application United Kingdom, Oct. 29, 1985, 1030113
Term of patent 14 years
U.S. Cl. D28—58

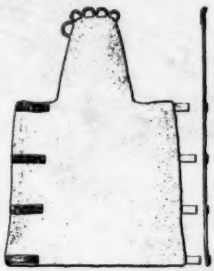


299,560
DENTAL FLOSSER
Paul V. Dalton, 7008 7th Avenue Blvd., NW., Bradenton, Fla. 33529
Filed Apr. 30, 1986, Ser. No. 858,291
Term of patent 14 years
U.S. Cl. D28—64

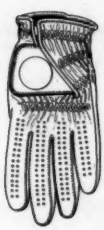
299,561
COSMETIC CASE
Karena Bakic, Munich, Fed. Rep. of Germany, assignor to Comede Anstalt, Vaduz, Liechtenstein
Filed Mar. 7, 1986, Ser. No. 880,286
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, URA 1128/85
Term of patent 14 years
U.S. Cl. D28—78



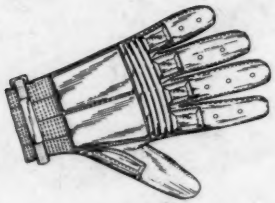
299,562
ARM PROTECTOR
Evelyn Lee, 1339 E. Sixth St., Bethlehem, Pa. 18015
Filed Oct. 21, 1985, Ser. No. 789,458
Term of patent 14 years
U.S. Cl. D29—20

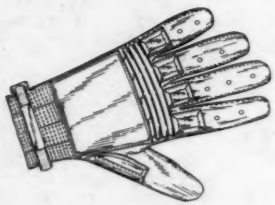


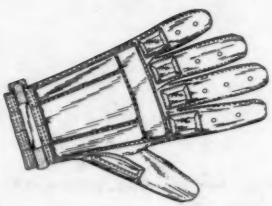
299,563
GOLF GLOVE
David D. Boone, Oceanside, Calif., assignor to Lynx Golf, Inc., City of Industry, Calif.
Filed Jan. 13, 1986, Ser. No. 818,048
Term of patent 14 years
U.S. Cl. D29—22



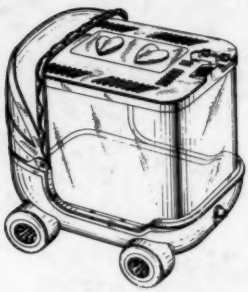
299,564
ATHLETIC GLOVE
Alfred R. Pierce, Jr., 25 Argyle Ave., Blackwood, N.J. 08012
Continuation-in-part of Ser. No. 687,745, Dec. 31, 1984, Pat. No. Des. 287,904. This application Apr. 25, 1986, Ser. No. 857,782
The portion of the term of this patent subsequent to Jan. 27, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—22



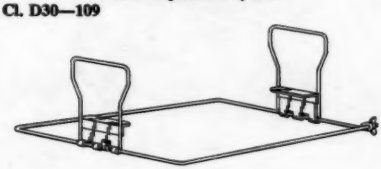




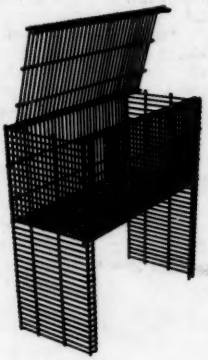
299,565
AQUARIUM
Mei-Kwei Lee Hsu, No. 239, Sec. 4, Chung-Chin North Road, Taipei, Taiwan
Filed Jul. 17, 1987, Ser. No. 74,915
Term of patent 14 years
U.S. Cl. D30—102



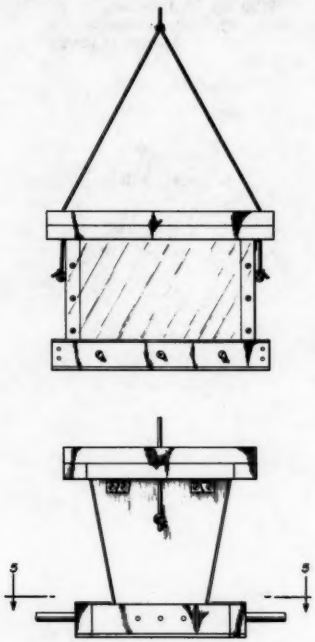
299,566
BEE HIVE CARRIER
Kelemen C. Kelemen, 12937 Ida West Rd., P.O. Box 8, Ida, Mich. 48140
Filed Jan. 13, 1986, Ser. No. 818,542
Term of patent 14 years
U.S. Cl. D30—109



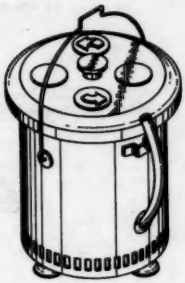
299,567
CAGE
Sybil E. Willingham, Rte. 1, Box 241, Butler, Ga. 31006
Filed Jun. 16, 1986, Ser. No. 875,352
Term of patent 14 years
U.S. Cl. D30—116



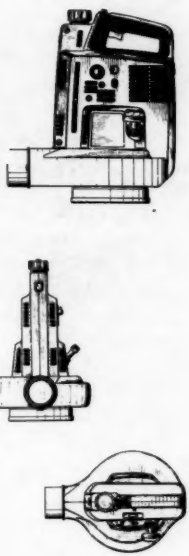
299,568
BIRD FEEDER
H. James Waltemeyer, 4 Hillside Dr., Jacobus, Pa. 17407
Filed Jul. 30, 1987, Ser. No. 80,553
Term of patent 14 years
U.S. Cl. D30—124



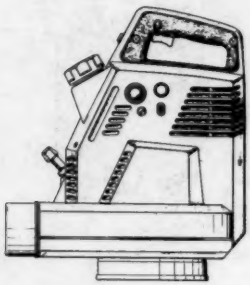
299,569
PORTABLE SPIN DRYER
Robert D. Davis, and Lois S. Davis, both of 321 East St. South, Box 141, Kewanee, Ill. 61443
Filed Jul. 12, 1985, Ser. No. 754,080
Term of patent 14 years
U.S. Cl. D32—8

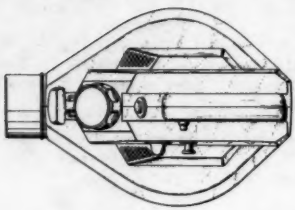


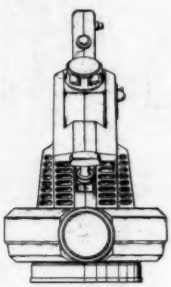
299,570
PORTABLE BLOWER
Katsumi Kiyooka, Saitama; Akira Gamoh, and Keiko Iramina, both of Tokyo, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan
Filed Jun. 9, 1986, Ser. No. 872,444
Claims priority, application Japan, Dec. 16, 1985, 60-051974
Term of patent 14 years
U.S. Cl. D32—15



299,571
PORTABLE BLOWER
Katsumi Kiyooka, Warabi; Akira Gamoh, Kodaira; Hideko Inomata, Higashiyamato, and Keiko Iramina, Tachikawa, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan
Filed Jan. 16, 1986, Ser. No. 819,356
Claims priority, application Japan, Jul. 16, 1985, 60-030057; Aug. 12, 1985, 60-034114; Aug. 12, 1985, 60-034115
Term of patent 14 years
U.S. Cl. D32—15



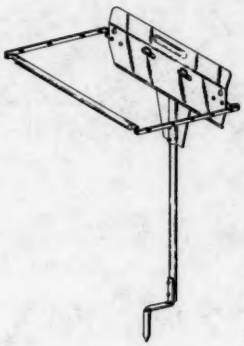




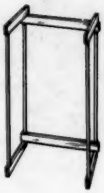
299,572
STEAM IRON OR THE LIKE
Eduard Rohner, Karlstein, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed May 8, 1987, Ser. No. 47,926
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1986, 5 MR 10728
Term of patent 14 years
U.S. Cl. D32—70

299,573
COMBINED CORDLESS LAUNDRY IRON AND RE-CHARGING BASE
Jacques Gudefin, St Priest, France, assignor to Calor S.A., Lyons, France
Filed Jul. 30, 1986, Ser. No. 890,728
Claims priority, application France, Jan. 31, 1986, 860.490
Term of patent 14 years
U.S. Cl. D32—70

299,574
COMBINED BAG HOLDER AND STAND
Alan F. Savicki, South Windsor, Conn., assignor to First Brands Corporation, Danbury, Conn.
Filed May 30, 1986, Ser. No. 869,030
Term of patent 14 years
U.S. Cl. D34—6

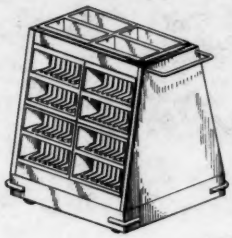


299,575
BAG SUPPORT
Frank J. DiFrank, 3442 Woodley Rd., Toledo, Ohio 43606
Filed Sep. 18, 1986, Ser. No. 909,457
Term of patent 14 years
U.S. Cl. D34—6

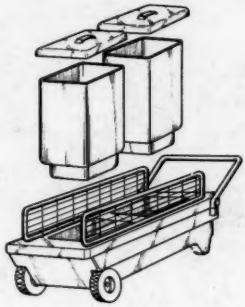


299,576
REFUSE AND STORAGE CONTAINER
Don Kracke, 39 Crespa Verde, Rolling Hills Estates, Calif. 90274
Filed Dec. 11, 1986, Ser. No. 940,638
Term of patent 14 years
U.S. Cl. D34—7

299,577
TAPE CARTRIDGE CART
Macy J. Price, Golden; Norman J. Acker, Wheatridge, both of Colo., and Mario B. Accumanno, Cedar Grove, N.J., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Oct. 31, 1985, Ser. No. 793,568
Term of patent 14 years
U.S. Cl. D34—21



299,578
COMBINED TRASH CONTAINERS AND CART THEREFOR
Jordan E. Wilson, 967 Continental, Detroit, Mich. 48215
Filed Oct. 24, 1986, Ser. No. 923,734
Term of patent 14 years
U.S. Cl. D34—25



299,579
JEWELRY PENDANT
Matthew G. Jones, 203 W. 5th St., Huntingburg, Ind. 47542
Filed Aug. 4, 1986, Ser. No. 892,406
Term of patent 14 years
U.S. Cl. D99—27

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corp.: *See*—
Nieminen, Jorma J., 4,799,937, Cl. 48-62.00R.

A. Menarini s.a.s.: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

A/S Apotekernes Faellesindkjop: *See*—
Dommerud, Svein A., 4,799,274, Cl. 5-82.00R.

Aardee Spring & Lock Co., Ltd.: *See*—
Duncan, Robert, 4,799,371, Cl. 70-214.000.

AB Volvo: *See*—
Janiszewski, Grzegorz K., 4,799,395, Cl. 74-331.000.

Abbott Laboratories: *See*—
Bailey, Mark W.; and Ulanday, Myrna G., 4,800,167, Cl. 436-66.000.

Abbott, Neil M. Ratchet tap wrench. 4,799,832, Cl. 408-123.000.

Abbott, Woodrow A.; and Durossette, Leo J. Fluid filter with improved electrode and spacer configuration. 4,800,011, Cl. 204-302.000.

Ablestien Industries, Inc.: *See*—
Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., 4,799,437, Cl. 110-229.000.

Abraham, William W.; and Gentelia, John S., to Conmed. Electrode for electrosurgical apparatus. 4,799,480, Cl. 128-303.130.

Aburaya, Toshio: *See*—
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.

Accattino, Andrea; and Jans, Aldo, to Ing. C. Olivetti & C., S.p.A. Method and apparatus for restoring operation of ink jet printing nozzles. 4,800,403, Cl. 346-140.00R.

Acco Babcock Inc.: *See*—
Pickell, John M., 4,799,400, Cl. 74-502.600.

Acheson, Willard P.: *See*—
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., 4,799,545, Cl. 166-246.000.

Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., to American Telephone and Telegraph Company; and Bell Telephone Laboratories, Incorporated. On-line documentation facility. 4,800,485, Cl. 364-200.000.

Acree, Elick H., to Gulf Nuclear, Inc. Method and apparatus for injecting radioactive tagged sand into oil and gas wells. 4,799,552, Cl. 166-305.100.

Action Pumping Services Ltd.: *See*—
Hockley, Stephen J., 4,799,864, Cl. 417-7.000.

Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Anti-skid apparatus for automotive vehicle. 4,800,289, Cl. 303-119.000.

Adams, Julian; and Guindon, Yvan, to Merck Frosst Canada, Inc. 4,7-diacetoxy-2-(4-methoxybenzyl)-3,5,6-trimethylbenzofuran. 4,800,228, Cl. 549-470.000.

Adamson, Fletcher D., to Russell Corporation. Method and apparatus for sensing the preferred side of garment portions. 4,799,613, Cl. 223-39.000.

Aderans Co., Ltd.: *See*—
Kobayashi, Hisao; and Mochizuki, Kousuke, 4,799,502, Cl. 132-53.000.

Advanced Design & Manufacture Limited: *See*—
Atkin, Howard S.; and Palmer, Christopher J., 4,799,539, Cl. 165-54.000.

Advanced Dimensional Displays, Inc.: *See*—
Newswanger, Craig, 4,799,739, Cl. 350-3.700.

Advanced Glass Systems Corp.: *See*—
Bolton, Nelson P.; and Smith, W. Novis, Jr., 4,799,346, Cl. 52-509.000.

Advanced Interventional Systems, Inc.: *See*—
Goldenberg, Tsvi, 4,799,754, Cl. 350-96.180.

Advanced Micro Devices, Inc.: *See*—
Asghar, Safdar M.; Pyi, Hwa-Sheng; and Dunnion, Dermot, 4,800,517, Cl. 364-757.000.
Iranmanesh, Ali; and Thomas, Mammen, 4,800,171, Cl. 437-31.000.
Walters, Donald M., Jr., 4,800,300, Cl. 307-279.000.

Advanced Techniques Co., Inc.: *See*—
Friedman, Gennady, 4,799,617, Cl. 228-180.200.

Aerospace Corporation, The: *See*—
Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., 4,799,780, Cl. 350-600.000.
Zimmerman, Albert H.; and Badcock, Charles C., 4,800,140, Cl. 429-48.000.

Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., to International Business Machines Corporation. Metal transfer to form printing master plate or printed circuit board. 4,800,397, Cl. 346-1.100.

Agnew Machine Company: *See*—
Kutzli, Carl R.; and Rutter, James D., 4,799,586, Cl. 198-803.010.

Agosta, Roy P.: *See*—
Robbins, Mark R.; Robbins, Douglas W.; and Agosta, Roy P., 4,799,727, Cl. 296-107.000.

Agrawal, Rakesh; and Ezzat, Ahmed K., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Method of propagating resource information in a computer network. 4,800,488, Cl. 364-200.000.

Agrogen Stiftung: *See*—
Knopf, Ulrich C.; and Sieber, Joseph, 4,799,358, Cl. 62-3.000.

Ahmed, Syed M., to Aqualon Company. Water-soluble polymer dispersion. 4,799,962, Cl. 106-188.000.

Ahrens, Max; and Haissig, Manfred, to Steel Casting Engineering, Ltd. Horizontal continuous casting mold. 4,799,533, Cl. 164-137.000.

Aihara, Masayo: *See*—
Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, 4,800,160, Cl. 435-177.000.

Ainslie, Benjamin J.; and Craig, Susan P., to British Telecommunications plc. Preparation of glass fibre. 4,799,946, Cl. 65-3.120.

Air Products and Chemicals, Inc.: *See*—
Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., 4,800,053, Cl. 264-83.000.
Carlin, Richard T.; and Dunbobbin, Brian R., 4,800,070, Cl. 423-210.500.

Airhart, Tom P., to Atlantic Richfield Company. Amphibious seismic source. 4,799,572, Cl. 181-114.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Koori, Yasuo; and Mitsui, Tsutomu, 4,800,497, Cl. 364-424.100.
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, 4,799,404, Cl. 74-869.000.

Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, to Kao Corporation. Cold rolling oil composition for aluminum and aluminum-containing alloys. 4,800,034, Cl. 252-56.00S.

Akasaka, Nobuhiro: *See*—
Kakuta, Tatsuya; and Akasaka, Nobuhiro, 4,799,762, Cl. 350-96.340.

Akashi, Akira, to Canon Kabushiki Kaisha. Apparatus for detecting focusing state of objective lens. 4,800,261, Cl. 250-204.000.

Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, to Canon Kabushiki Kaisha. Focus detecting apparatus for selecting the operating process in conformity with the contrast of an object. 4,800,410, Cl. 354-408.000.

Akers, Cliff; and James, Richard N. Vehicle cover. 4,799,728, Cl. 296-136.000.

Akiba, Kouji; Kitajima, Akira; and Arai, Yoshio, to Hochiki Kabushiki Kaisha. Flame detecting arrangement for detecting a flame through horizontal and vertical scanning of a supervisory region by using a photodetector. 4,800,285, Cl. 250-554.000.

Akiyama, Susumu: *See*—
Ina, Katsuhiro; Akiyama, Susumu; and Hirabayashi, Yuzi, 4,800,499, Cl. 364-431.030.

Aktiebolaget Electrolux: *See*—
Farquhar, George N., 4,799,468, Cl. 123-400.000.

Albany International Corp.: *See*—
Dutt, William H., 4,799,998, Cl. 162-348.000.

Albrecht, Thomas; and Lee, Chan H., to Board of Regents, The University of Texas System. Methods and compositions for treating viral infections. 4,800,081, Cl. 424-129.000.

Alcan Aluminio Do Brasil, S.A.: *See*—
Cuminale, Francesco, 4,799,508, Cl. 137-534.000.

Alcantara, Miguel A.: *See*—
Lazcano-Navarro, Arturo; Alcantara, Miguel A.; and Hernandez-Ruiz, Jose E., 4,799,651, Cl. 166-268.000.

Alcatel Thomson Faisceaux: *See*—
Gurcan, Mustafa; and Cruchon, Jean-Claude, 4,800,349, Cl. 333-208.000.

Alcor, Inc.: *See*—
Portman, Joseph L., Jr.; and Margraf, David J., 4,799,378, Cl. 73-54.000.

Alexandrova, Olga G.: *See*—
Fedorov, Svyatoslav N.; Krutov, Sergei V.; Soloviev, Sergei A.; Alexandrova, Olga G.; and Korshunova, Nadezhda K., 4,799,478, Cl. 128-303.100.

Alexoff, Randall L., to George A. Mitchell Company. Method for severing the ends of tubing. 4,799,412, Cl. 83-54.000.

Alfa-Laval Separation AB: *See—*
Klintenstedt, Kjell; and Lantz, Christer, 4,800,367, Cl. 340-526.000.
Alfa-Laval Thermal AB: *See—*
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Alfred Fischbach KG Kunststoff-SpritzguBwerk: *See—*
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Alfred Grass Ges.m.b.H. Metallwarenfabrik: *See—*
Grass, Alfred, 4,799,289, Cl. 16-236.000.
Alig, Leo; and Muller, Marcel, to Hoffmann-La Roche Inc. Pyridine-ethanolamine derivatives. 4,800,206, Cl. 514-332.000.
Allen, Louis. Holder for a beverage container. 4,799,638, Cl. 248-311.200.
Allen, Robert D.; Frechet, Jean M. J.; Twieg, Robert J.; and Willson, Carlton G., to International Business Machines Corporation. Negative resist compositions. 4,800,152, Cl. 430-270.000.
Allen, Robert J.; Rolando de Alvare, Louis; and Spence, Floyd G., to BASF Corporation. Colorants for ball point pen and ribbon inks derived from pararosaniline process residue. 4,800,043, Cl. 260-391.000.
Allied Automation Systems, Inc.: *See—*
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Allied Gator, Inc.: *See—*
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Marshall, Robert M., 4,800,117, Cl. 428-260.000.
Verner, Douglas R., 4,800,480, Cl. 363-60.000.
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Marshall, Claire B.; Lake, Frank B.; and Bushey, Roger A., 4,800,131, Cl. 428-558.000.
Alloy Surfaces Company, Inc.: *See—*
Baldi, Alfonso L., 4,799,979, Cl. 149-5.000.
Aloka Co., Ltd.: *See—*
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Alps Electric Co., Ltd.: *See—*
Suzuki, Motoyuki; and Kikuchi, Kazuo, 4,800,444, Cl. 358-294.000.
ALZA Corporation: *See—*
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Amano, Itaru: *See—*
Fujieda, Yasuhiko; Amano, Itaru; and Kanzawa, Masahide, 4,799,871, Cl. 425-38.000.
Amchem Products, Inc.: *See—*
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Amdahl Corporation: *See—*
Si, Stephen S. C.; Lee, H. P. Sherman; and Rawlinson, Stephen J., 4,800,516, Cl. 364-748.000.
Ameda AG: *See—*
Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, 4,799,922, Cl. 604-74.000.
Amerace Corporation: *See—*
Borgstrom, Alan D., 4,799,895, Cl. 439-183.000.
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Goodale, Clarke W., 4,799,277, Cl. 5-451.000.
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Welter, Curtis; Coto, Guillermo; and Patrikios, Michael, 4,799,614, Cl. 228-1.100.
American Telephone and Telegraph Company: *See—*
Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., 4,800,485, Cl. 364-200.000.
Cupo, Robert L., 4,800,573, Cl. 375-14.000.
Tsai, Sheng J., 4,800,301, Cl. 307-362.000.
American Telephone and Telegraph Company, AT&T Bell Laboratories: *See—*
Agrawal, Rakesh; and Ezzat, Ahmed K., 4,800,488, Cl. 364-200.000.
Foschini, Gerard J., 4,800,555, Cl. 370-3.000.
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American Vertical Systems: *See—*
Villoch, Joe D.; Gatto, Claudio U.; and Oprisi, Mike V., 4,799,527, Cl. 160-168.100.
Amoco Corporation: *See—*
Hale, James L.; and Hodges, Harold D., 4,799,721, Cl. 294-1.100.
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Rodal, David R.; and Osborn, Nathan W., 4,800,450, Cl. 360-73.060.
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Roesgen, John P., 4,800,524, Cl. 364-900.000.
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Anderson, James S.: *See—*
Lim, Mu-Ill; and Anderson, James S., 4,799,934, Cl. 8-414.000.
Anderson, Steven L., to Motorola, Inc. Modem FSK demodulation method and apparatus. 4,800,575, Cl. 375-80.000.
Andersson, Lars; and Kamph, Bengt, to Autostop AB. Arrangement in vehicle hydraulic service brake systems. 4,799,570, Cl. 180-275.000.
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Bengtsson, Erik; and Andersson, Ulf, 4,800,074, Cl. 423-588.000.
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Ankum, Robert H.; and Olson, Jay H., to Deere & Company. Self-aligning hinge. 4,799,291, Cl. 16-259.000.
Annala, Wayne C., to United States of America, Energy. Discriminating ultrasonic proximity detection system. 4,800,540, Cl. 367-87.000.
Anritsu Corporation: *See—*
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Aoki, Shigemasa: *See—*
Nomura, Yoshiharu; Aoki, Shigemasa; and Nishimura, Akira, 4,800,196, Cl. 514-159.000.
Aoki, Takahiro; and Tejima, Shunichiro, to NEC Corporation. Synchronization control capable of establishing synchronization without transmission of distance information between control and local earth stations. 4,800,560, Cl. 370-104.000.
Aoyama, Akira: *See—*
Kano, Nobuhiko; Aoyama, Akira; and Kunida, Shinobu, 4,800,112, Cl. 428-163.000.
Apparel Machinery International, Ltd.: *See—*
Hinckle, John E., 4,799,438, Cl. 112-121.120.
Appiano, Silvano; Chiarottino, Wolmer; Pozzi, Mauro; and Reali, Aldo, to Sip- Societa Italiana per L'Esercizio Delle Telecomunicazioni S.P.A. Interface module for superimposing alphanumeric characters upon RGB video signals. 4,800,423, Cl. 358-21.00R.
Appleton, Richard E. Swing. 4,799,669, Cl. 272-85.000.
Applied Power Inc.: *See—*
Miller, Douglas P., 4,799,657, Cl. 269-24.000.
Applied Protein Technologies, Inc.: *See—*
Horn, Marcus J.; and Recchia, Joanne, 4,800,166, Cl. 436-55.000.
Aprica Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,799,736, Cl. 297-440.000.
Aptec Computer Systems, Inc.: *See—*
McAlpine, Gary L., 4,800,535, Cl. 365-230.000.
Aqualon Company: *See—*
Ahmed, Syed M., 4,799,962, Cl. 106-188.000.
Arai, Kozo; Suzuki, Takao; and Umetsu, Syozo, to Showa Aluminum Corporation. Aluminum alloy foil for cathode of electrolytic capacitors. 4,800,133, Cl. 428-606.000.
Arai, Noboru: *See—*
Tajima, Kenji; and Arai, Noboru, 4,799,591, Cl. 206-455.000.
Arai, Yoshio: *See—*
Akiba, Kouji; Kitajima, Akira; and Arai, Yoshio, 4,800,285, Cl. 250-554.000.
Arakawa, Hideki, to Fujitsu Limited. Semiconductor nonvolatile memory device. 4,800,533, Cl. 365-228.000.
Arakawa, Satoshi; Miyahara, Junji; and Takahashi, Kenji, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,800,136, Cl. 428-690.000.
Arase, Akira; and Wada, Ichiro, to Okamura Corporation. Lifting down apparatus for a multi-stage shelf assembly. 4,799,843, Cl. 414-331.000.
Araya Industrial Co., Ltd.: *See—*
Kosaka, Akihiko, 4,799,304, Cl. 29-159.020.
Arco Chemical Company: *See—*
Younes, Usama E., 4,800,058, Cl. 264-328.400.
Ariaz, Dan. Flowable solid product applicator. 4,799,831, Cl. 406-136.000.
Armco Inc.: *See—*
Kilbane, Farrell M.; Coleman, Richard A.; Dunbar, Frank C.; and Gibson, Alan F., 4,800,135, Cl. 428-653.000.
Armstrong World Industries, Inc.: *See—*
Tymon, Thomas M.; and Niznik, Shelly S., 4,800,041, Cl. 252-378.00R.
Arnheim, Norman: *See—*
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.

Arsi, Joseph N. Freeze alarm. 4,800,371, Cl. 340-593.000.

Arthun, Nils; and Lofgren, Peter, to Steridose Systems. Method of aseptic treatment of water and a storage container to be used at such treatment. 4,800,023, Cl. 210-644.000.

Asakura, Toshimitsu: *See*—
Hattori, Shigeru; and Asakura, Toshimitsu, 4,799,569, Cl. 180-219.000.

Asami, Tetsuya: *See*—
Kakumu, Masakazu; and Asami, Tetsuya, 4,800,176, Cl. 437-193.000.

Asano, Akio, to Mikasa Sangyo Co., Ltd. Safety device for control lever of construction machines. 4,799,398, Cl. 74-473.00R.

Asano, Hazime: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.

Asano, Masaharu: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Asaoka, Teruo: *See*—
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.

ASEA Aktiebolag: *See*—
Nimmersjo, Gunnar, 4,800,509, Cl. 364-492.000.

Asghar, Safdar M.; Pyi, Hwa-Sheng; and Dunnion, Dermot, to Advanced Micro Devices, Inc. Word-sliced signal processor. 4,800,517, Cl. 364-757.000.

ASM America, Inc.: *See*—
Gardner, Steven J., 4,799,451, Cl. 118-500.000.

Ast, Adolf: *See*—
Murdter, Herbert; and Ast, Adolf, 4,799,559, Cl. 177-124.000.

Astley, Graham J.: *See*—
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., 4,799,287, Cl. 15-405.000.

AT&T Information Systems Inc.: *See*—
Cupo, Robert L., 4,800,573, Cl. 375-14.000.

Atago, Takeshi: *See*—
Nagano, Masami; Atago, Takeshi; and Manaka, Toshio, 4,799,469, Cl. 123-418.000.

Atkin, Howard S.; and Palmer, Christopher J., to Advanced Design & Manufacture Limited. Thermally efficient room ventilator. 4,799,539, Cl. 165-54.000.

Atlantic Richfield Company: *See*—
Airhart, Tom P., 4,799,572, Cl. 181-114.000.
Lara, Pedro F., 4,799,391, Cl. 73-865.800.

ATR International, Inc.: *See*—
Humphries, David R.; Fetterhoff, Donald C.; and Higgins, William R., 4,799,631, Cl. 244-118.500.

Atsumi, Senji: *See*—
Kajihara, Takehiro; Atsumi, Senji; and Izumiya, Hirotsugu, 4,800,320, Cl. 313-625.000.

August, Joseph R., to Musser's Potato Chips, Inc. Infrared and microwave energy treatment of food. 4,800,090, Cl. 426-243.000.

August Sauter GmbH: *See*—
Murdter, Herbert; and Ast, Adolf, 4,799,559, Cl. 177-124.000.

Autostop AB: *See*—
Andersson, Lars; and Kamph, Bengt, 4,799,570, Cl. 180-275.000.

Autotyp S.A.: *See*—
Ilon, Bengt E., 4,799,522, Cl. 152-213.00R.

Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, to Pitney Bowes Inc. Mail preparation system. 4,800,505, Cl. 364-478.000.

Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; and Schmidt, Alfred C., to Pitney Bowes Inc. Apparatus for preparing mail pieces. 4,800,506, Cl. 364-478.000.

Azad, Farzin H., to General Electric Company. Reflector design for a slab laser. 4,800,569, Cl. 372-99.000.

Azimov, Naum. Flow system of static parameters. 4,799,511, Cl. 137-613.000.

B. Braun Melsungen AG: *See*—
Knoch, Martin; Reul, Helmut; and Rau, Gunter, 4,799,930, Cl. 623-2.000.

Babcock Hitachi Kabushiki Kaisha: *See*—
Shigenaka, Toshinori; and Kusaka, Iwao, 4,799,461, Cl. 122-7.00R.

Babcock & Wilcox Company, The: *See*—
Barnett, Daniel C.; and Hall, George R., II, 4,799,394, Cl. 73-864.810.

Babine, Robert; and Lee, Ving J., to American Cyanamid Company. 3-[2-thiazoloamino]-8-oxo-7-substituted-5-thia-1-azabicyclo-[4.2.0]oct-2-ene-2-carboxylic acid and salts thereof and diphenylmethyl esters thereof. 4,800,199, Cl. 514-202.000.

Badcock, Charles C.: *See*—
Zimmerman, Albert H.; and Badcock, Charles C., 4,800,140, Cl. 429-48.000.

Badger, Carl L. Chisel plow mounting assembly. 4,799,555, Cl. 172-751.000.

Baggio, Giorgio; and De Bortoli, Giuseppe, to Nordica S.P.A. Closure and securing device, particularly for ski boots. 4,799,297, Cl. 24-68.0SK.

Bailey, Mark W.; and Ulanday, Myrna G., to Abbott Laboratories. Reagent and process for the determination of hemoglobin in blood. 4,800,167, Cl. 436-66.000.

Baize, Dominique; Cleand, Maurice; and Minard, Serge, to Electricite de France. Computing installation with automatic terminal switching and a terminal adapted to such switching. 4,800,484, Cl. 364-200.000.

Bajusz, Sandor: *See*—
Schally, Andrew V.; and Bajusz, Sandor, 4,800,191, Cl. 514-15.000.

Baker, Don R.; Walker, Francis H.; and Brownell, Keith H. Fungicidal pyridyl sulfenyl carbamates. 4,800,205, Cl. 514-346.000.

Bakker, Age; Schepers, Genesius J. J. M.; and Koerts, Kees, to Coopersatieve Vereniging Suiker Unie U.A. Method for demineralizing beet sugar thin juice. 4,799,965, Cl. 127-46.200.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Heat generation. 4,799,979, Cl. 149-5.000.

Bally Manufacturing Corporation: *See*—
Frederikaen, Jeffrey E., 4,799,677, Cl. 273-1.00E.

Balogh, Edward N.: *See*—
Hoggan, Lynn D.; Van Wagoner, Earl, III; and Balogh, Edward N., 4,799,671, Cl. 272-118.000.

Balyasny, Marik, to G & H Technology, Inc. Fiber optic connector. 4,799,759, Cl. 350-96.210.

Balzano, Quirino; and Garay, Oscar M., to Motorola, Inc. High efficiency helical antenna. 4,800,395, Cl. 343-895.000.

Balzano, Quirino: *See*—
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., 4,800,392, Cl. 343-700.0MS.

Banigan, Raymond M. Three wire grounded, polarized stage plug and receptacle. 4,799,894, Cl. 439-92.000.

Barabino, William A.; and Dean, Raymond S., to Triad Direct Incorporated. Liquid dispensing swab applicator system. 4,799,815, Cl. 401-132.000.

Barber, Thomas D.; Vandermeer, William B.; and Flanagan, William D., to Schlumberger Technology Corporation. Method for determining induction sonde error. 4,800,496, Cl. 364-422.000.

Barnett, Daniel C.; and Hall, George R., II, to Babcock & Wilcox Company, The. Analyzer block for sealing and isolating analyzer gas sample flow. 4,799,394, Cl. 73-864.810.

Barnett, Ronnie D.; and Parkes, Steven M., to Grass Valley Group, Inc., The. Video Difference key generator. 4,800,432, Cl. 358-160.000.

Barnett, Thomas R. Ski attachment for protecting the upper surface of the rear portion of a ski. 4,799,710, Cl. 280-809.000.

Barrett, William L. Powerlift competition safety device. 4,799,672, Cl. 272-123.000.

Barsi, Karoly: *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.

Bartley, Shannon L.: *See*—
Pearson, Norman R.; Bartley, Shannon L.; and Kleschick, William A., 4,799,952, Cl. 71-92.000.

Barzanti, Adriano: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

BASF Aktiengesellschaft: *See*—
Buehler, Volker; Hofmann, Friedbert; and Heinz, Robert, 4,800,086, Cl. 424-497.000.

BASF Corporation: *See*—
Allen, Robert J.; Rolando de Alvare, Louis; and Spence, Floyd G., 4,800,043, Cl. 260-391.000.

Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., to PPG Industries, Inc. Optically transparent UV-protective coatings. 4,799,963, Cl. 106-287.130.

Basler Electric Company: *See*—
Bowers, Jack R., 4,800,291, Cl. 307-87.000.

Bateson, George: *See*—
Morris, Charles; and Bateson, George, 4,800,097, Cl. 426-632.000.

Battelle Development Corporation: *See*—
Ingalls, John P.; Maringer, Robert E.; and Wood, Ray D., 4,799,536, Cl. 164-479.000.

Battelle Memorial Institute: *See*—
Bechet, Louis, 4,800,240, Cl. 178-18.000.

Battocchi, Silvio R. Knife sharpening device. 4,799,335, Cl. 51-102.000.

Batzer, Thomas H.; and Call, Wayne R., to University of California, The Regents of the. Radial pressure flange seal. 4,799,692, Cl. 277-34.000.

Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, to Klein, Schanzlin & Becker Aktiengesellschaft. Casing for fluid flow machines. 4,799,857, Cl. 415-185.000.

Bauer, Karl-Heinz; Eckert, Gerold; and Maidhof, Rudiger, to Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co. Illumination device for a front panel. 4,800,466, Cl. 362-26.000.

Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, to Magyar Szenhidrogenipari Kutato-Fejleszto Intezet. Enhanced oil recovery. 4,799,551, Cl. 166-303.000.

Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., to Air Products and Chemicals, Inc. Injection molding process with reactive gas treatment. 4,800,053, Cl. 264-83.000.

Baur, Guter; Scheuble, Bernhard; and Fehrenbach, Waltraud, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Electrooptical display element using a supertwist liquid crystal having specified elastic constants. 4,799,774, Cl. 350-346.000.

Baxter, Anthony G. W.; Bostock, Stephen B.; and Greenwood, David, to Canon Kabushiki Kaisha. Ink comprising water soluble triazine dye free from cellulose reactive groups. 4,799,960, Cl. 106-22.000.

Baxter International Inc.: *See*—
Leonard, Ronald J., 4,800,022, Cl. 210-636.000.

Bayer Aktiengesellschaft: *See*—
Eichenauer, Herbert; and Pischtschan, Alfred, 4,800,216, Cl. 525-285.000.
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, 4,800,202, Cl. 514-227.000.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
Mueller, Rudolf; and Strasser, Ludwig, 4,799,703, Cl. 280-91.000.
Bayless, Allan V.: *See*—
Moorehead, Thomas J.; and Bayless, Allan V., 4,800,194, Cl. 514-89.000.
Baymak, Faruk; and Stueben, Helmut, to Messerschmitt-Boelkow-Blohm GmbH. Seat for a vehicle, especially an aircraft seat. 4,799,632, Cl. 244-122.00R.
BBC Brown Boveri AG: *See*—
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotass, Birger, 4,800,481, Cl. 363-70.000.
BBC Brown, Boveri Aktiengesellschaft: *See*—
Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, 4,800,143, Cl. 429-153.000.
BBC Brown, Boveri & Company, Limited: *See*—
Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, 4,800,363, Cl. 340-310.00A.
Johner, Heinz, 4,800,257, Cl. 235-472.000.
Be Hyeon, Suong: *See*—
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.
Bead Chain Manufacturing Co.: *See*—
Peleckis, Anthony J., 4,799,589, Cl. 206-330.000.
Beatty, Johnny W.; and DiMarco, Brian A., to Siecor Corporation. Strain relief apparatus. 4,799,760, Cl. 350-96.230.
Beaulieu, Nelson K. Hook for releasing parachute or the like from a kite. 4,799,634, Cl. 244-155.00R.
Beauquey, Bernard: *See*—
Groilier, Jean-Francois; and Beauquey, Bernard, 4,800,080, Cl. 424-74.000.
Bebel, Elie: *See*—
Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , 4,800,352, Cl. 335-132.000.
Bechet, Louis, to Battelle Memorial Institute. Device for detecting the displacement of a writing implement. 4,800,240, Cl. 178-18.000.
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., to International Buisness Machines Corporation. Automatic relocate on continuation of document playout. 4,799,811, Cl. 400-279.000.
Beecham Group p.l.c.: *See*—
Evans, John M.; and Stemp, Geoffrey, 4,800,212, Cl. 514-424.000.
Smith, Paul, 4,800,225, Cl. 546-112.000.
Beeh, Hans A. Machine and a method for dyeing fabrics with already known dyestuffs. 4,799,278, Cl. 8-151.000.
Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, to Ameda AG. Breast pump insert. 4,799,922, Cl. 604-74.000.
Beezer, Earl F.: *See*—
Beezer, William E.; and Beezer, Earl F., 4,799,405, Cl. 29-822.000.
Beezer, William E.; and Beezer, Earl F. Assembly machine chassis. 4,799,405, Cl. 29-822.000.
Beffa, Fabio; and Koller, Josef, to Ciba-Geigy Corporation. Process for the trichromatic dyeing of leather. 4,799,933, Cl. 8-404.000.
Behrendt, Ulrich: *See*—
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.
Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., to Ablestien Industries, Inc. Heating stove which includes a pyrolysis gasifier. 4,799,437, Cl. 110-229.000.
Beirne, John M.: *See*—
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.
Belanger, Inc.: *See*—
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., 4,799,287, Cl. 15-405.000.
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., to Belanger, Inc. Blower housing construction. 4,799,287, Cl. 15-405.000.
Beley, Serce; and Fourrey, Francois, to Cycles Peugeot. Seat structure having a pivotable backrest and in particular a front seat structure of a motor vehicle. 4,799,733, Cl. 297-379.000.
Bell Telephone Laboratories, Incorporated: *See*—
Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., 4,800,485, Cl. 364-200.000.
Bellmer, Klaus; and Capelle, Gerd, to Hermann Berstorff Maschinenbau GmbH. Extrusion head. 4,799,874, Cl. 425-131.100.
Benfield, Dan W., to Platt Saco Lowell Corporation. Drawbox air shut-off and method for doffing a textile comber. 4,799,295, Cl. 19-159.00R.
Bengtsson, Erik; and Andersson, Ulf, to EKA Nobel AB. Process for the production of hydrogen peroxide. 4,800,073, Cl. 423-588.000.
Bengtsson, Erik; and Andersson, Ulf, to EKA Nobel AB. Process for the production of hydrogen peroxide. 4,800,074, Cl. 423-588.000.
Benitez, Richard. Closure device. 4,799,528, Cl. 160-199.000.
Bennett, Allan: *See*—
Simpson-Davis, Raymon W.; and Bennett, Allan, 4,800,260, Cl. 235-487.000.
Benton, Robert H.: *See*—
Podell, Allen F.; and Benton, Robert H., 4,800,345, Cl. 333-111.000.
Benton, Ronald E. Bending machine. 4,799,373, Cl. 72-307.000.
Berfield, Robert C., to Shop-Vac Corporation. Outlet port baffle for exhaust air. 4,799,285, Cl. 15-327.00R.
Berfield, Robert C.; and Seasholtz, Craig A., to Shop-Vac Corporation. Dolly frame. 4,799,699, Cl. 280-79.500.
Berg, Dieter: *See*—
Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, 4,800,202, Cl. 514-227.000.
Bergersen, Earl O. Expansion/buccal shield appliance. 4,799,884, Cl. 433-6.000.
Bernard, Alain; and Touboul, Pierre, to Office National d'Etudes et de Recherches Aerospatiales. Electrostatic accelerometer with dual electrical connection to its test mass. 4,799,386, Cl. 73-517.00B.
Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., to Aerospace Corporation, The. Aberrated suppressor mirror. 4,799,780, Cl. 350-600.000.
Berney, Jean-Claude, to U.S. Philips Corp. Method of analyzing the voltage induced in an exciter coil of a stepping motor. 4,800,334, Cl. 324-158.0MG.
Berns, Everhardus G.: *See*—
Van Kemenade, Johannes T. C.; De Hair, Johannes T. W.; and Berns, Everhardus G., 4,800,319, Cl. 313-487.000.
Berrod, Gerard: *See*—
Vinot, Bernard; Berrod, Gerard; and Brun, Jean-Louis, 4,799,549, Cl. 166-293.000.
Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, to Wilhelm Hegenscheidt GmbH. Method and apparatus for performing a rotary broaching operation particularly on work pieces of rotational symmetry. 4,799,839, Cl. 409-244.000.
Bertagnoli, Leopoldo, to Orizio Paolo S.p.A. Knitting or hosiery machine with electronic-controlled, electromechanically actuated selection of the needles. 4,799,366, Cl. 66-219.000.
Berthagen, Leif: *See*—
Karlsson, Bertil; and Berthagen, Leif, 4,800,007, Cl. 204-196.000.
Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, to Electricite de France Service National; and Ecole Centrale des Arts et Manufactures de Paris. Process for measuring the temperature of a body by optical detection and modulated heating. 4,799,788, Cl. 356-45.000.
Bertram, James L.; Myles, Willie L.; and Kubisiak, Michael P., to Dow Chemical Company, The. Compositions prepared from dialkanolamines and triglycidyl ethers of trisphenols. 4,800,215, Cl. 523-414.000.
Beth Israel Hospital Association, The: *See*—
Spears, J. Richard, 4,799,479, Cl. 128-303.100.
BeVier, William E.; Fails, Charles F., deceased; and by Fails, Virginia N., executor, to UOP. Process for continuous application of solid lubricant to moving bed particles. 4,800,027, Cl. 252-18.000.
Bhat, Gulgunji R.; Lukenbach, Elvin R.; and Stutzman, Ralph C., to Johnson & Johnson Consumer Products, Inc. Skin care compositions. 4,800,076, Cl. 424-69.000.
Biava, Richard D.; and Whelan, Andrew J., to Physicians' Pharmaceutical Services, Inc. Prescription sheet and medication distribution system. 4,799,712, Cl. 282-1.00A.
Bibaeff, John A., to Pony Industries, Inc. Apparatus and process for the gas flotation purification of oil-contaminated water. 4,800,025, Cl. 210-703.000.
Biek, Paul A.: *See*—
Pennison, Robert A.; and Biek, Paul A., 4,799,833, Cl. 408-132.000.
Bigler, John M.: *See*—
Gunn, Erwin T.; Bigler, John M.; and Hamill, Patrick J., 4,799,600, Cl. 220-1.500.
Bikson, Benjamin; and Giglia, Salvatore, to Union Carbide Corporation. Tubesheet for semipermeable membrane devices. 4,800,019, Cl. 210-321.800.
Binder, Ulrich, to O&K Orenstein & Koppel Aktiengesellschaft. Apparatus for the classifying of powdered bulk materials. 4,799,595, Cl. 209-135.000.
Binks Bullows Limited: *See*—
Dixon, George; and Eaves, Henry W., 4,799,944, Cl. 55-446.000.
Biro , Zoltan: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Birt, Robert M. Motor vehicle window ventilator. 4,799,422, Cl. 98-2.130.
Bisaga, Gary J.: *See*—
Florea, Michael; Foster, Stephen C.; and Bisaga, Gary J., 4,800,559, Cl. 370-94.000.
Bisbee, Jerry L. Child-proof adaptor for disposable butane cigarette lighter. 4,799,877, Cl. 431-153.000.
Bisconte, Jean-Claude, to Institut National de la Sante et de la Recherche Medicale-INSERM. Automatic device for the analysis and cloning of cellular cultures as well as for bacteriological analysis. 4,800,164, Cl. 435-300.000.
Bish, James R.; McCartney, Charles P., Jr.; and Meadows, Clarence A., to General Motors Corporation. Electric storage battery. 4,800,142, Cl. 429-130.000.
Bisping, Hans-Jurgen. Implantable electrode with active fixation means. 4,799,499, Cl. 128-785.000.
Bixler, Timothy J.: *See*—
Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., 4,799,780, Cl. 350-600.000.
Black & Decker, Inc.: *See*—
Nickels, Richard C., Jr.; and Podhorniak, Gary S., 4,800,357, Cl. 336-198.000.

Black, Donald L.: *See*—
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., 4,800,543, Cl. 368-10.000.

Blackburn, James H.; and Blackburn, Maureen T. Cover for christmas trees. 4,799,520, Cl. 150-52.00R.

Blackburn, Maureen T.: *See*—
Blackburn, James H.; and Blackburn, Maureen T., 4,799,520, Cl. 150-52.00R.

Blackman, Stephen M., to Federal Paper Board Co., Inc. Vending and reclosure device for powder and granular products. 4,799,594, Cl. 206-626.000.

Blais, Francois, to Canadian Patents & Development Ltd. Galvanometric optical scanning system having a pair of closely located synchronization. 4,800,270, Cl. 250-235.000.

Blais, Francois, to Canadian Patents & Development Ltd. Galvanometric optical scanning system having synchronization photodetectors. 4,800,271, Cl. 250-235.000.

Blanco, Louis A.: *See*—
Schneider, Marvin; Blanco, Louis A.; and Milo, Salvatore A., 4,800,247, Cl. 219-10.55E.

Blanda, Guy, to Sanofi. Process and apparatus for turning head to foot and packing dissymmetrical oblong bodies. 4,799,351, Cl. 53-446.000.

Blauvelt, Kenneth: *See*—
Ginsburg, Arthur P.; Evans, David W.; and Blauvelt, Kenneth, 4,800,404, Cl. 351-243.000.

Bleicher, Joel N. Reanimation device and method for treating the paralyzed face. 4,799,487, Cl. 128-419.00R.

Bleicher, Maximilian: *See*—
Joseph, Johannes; Bleicher, Maximilian; and Greiner, Walter, 4,800,381, Cl. 340-764.000.

Bloecher, Ulrich; and Duwell, Ernest J., to Minnesota Mining and Manufacturing Company. Erodable agglomerates and abrasive products containing the same. 4,799,939, Cl. 51-293.000.

Bloomfield, Philip E.; Ferren, Richard A.; and Wickwire, Dean H., to Pennwalt Corporation. Die drawing process and apparatus for piezoelectric polymer films and tubes. 4,800,048, Cl. 264-22.000.

Board of Regents: *See*—
Weldon, William F.; Gully, John H.; and Pichot, Mark A., 4,800,311, Cl. 310-178.000.

Board of Regents, The University of Texas System: *See*—
Albrecht, Thomas; and Lee, Chan H., 4,800,081, Cl. 424-129.000.
Linner, John G., 4,799,361, Cl. 62-64.000.

Bodewein, Jakob, to Jagenberg Aktiengesellschaft. Sheet stacker. 4,799,847, Cl. 414-790.800.

Boeckeler, Rudolph H., to Freeman Chemical Corporation. In-mold scratch resistant coating for peroxide curable urethane elastomers. 4,800,123, Cl. 428-424.200.

Boeing Company, The: *See*—
Gunn, Erwin T.; Bigler, John M.; and Hamill, Patrick J., 4,799,600, Cl. 220-1.500.
Huggins, Raymond W., 4,799,797, Cl. 356-345.000.
McGrady, Michael B., 4,799,476, Cl. 128-202.110.

Bogacz, Joseph: *See*—
Freda, Gerald; Bogacz, Joseph; Freda, Joseph; and Olson, Dennis, 4,800,094, Cl. 426-513.000.

Bohman, Carl E.: *See*—
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., 4,799,625, Cl. 241-30.000.

Boikov, Vladimir P.: *See*—
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg I.; and Sizova, Svetlana I., 4,799,919, Cl. 474-205.000.

Bolger, John G.; and Ng, Lung S. B., to Inductran Inc. Inductive power coupling with constant voltage output. 4,800,328, Cl. 320-2.000.

Bolton, Nelson P.; and Smith, W. Novis, Jr., to Advanced Glass Systems Corp. Laminated glazing unit. 4,799,346, Cl. 52-509.000.

Bomer, Brunt; and Piejko, Karl-Erwin, to Miles Inc. Test aids and method for the preparation thereof. 4,800,169, Cl. 436-166.000.

Bone, Matthew F.: *See*—
Crossland, William A.; Davey, Anthony B.; and Bone, Matthew F., 4,799,775, Cl. 350-350.00S.

Bonneau, Alian; and Paseri, Jacques, to Societe d'Etudes Techniques et d'Entreprises Generales - Sodeteg. Method to test the polishing of a mirror and system to use this method. 4,799,792, Cl. 356-124.000.

Booze, Raymond F. Auxiliary rifle sight. 4,799,325, Cl. 42-100.000.

Bopp, Stefan, to Daimler-Benz Aktiengesellschaft. Motor vehicle transmission mounting system. 4,799,571, Cl. 180-294.000.

Borchardt, John K., to Shell Oil Company. A CO_2 drive process for oil recovery employing an alcohol ethoxycarboxylate surfactant. 4,799,547, Cl. 166-275.000.

Borgstrom, Alan D., to Amerace Corporation. 660-amp hot stick operable screw-assembled connector system. 4,799,895, Cl. 439-183.000.

Bormann, Alan R.: *See*—
Yu, Ruey J.; and Bormann, Alan R., 4,800,298, Cl. 307-443.000.

Borner, Manfred; Muller, Reinhard; and Trommer, Gert, to Siemens Aktiengesellschaft. Integrated resonator matrix for wavelength-selective separation or joining of channels in the frequency domain of optical communications technology. 4,799,749, Cl. 350-96.130.

Bornhorst, James M., to Vari-Lite, Inc. Color wheel assembly for lighting equipment. 4,800,474, Cl. 362-293.000.

Boser, Ronald J. Method of sewing elastic about a garment opening. 4,799,441, Cl. 112-262.200.

Boshold, Klaus: *See*—
Nossek, Josef A.; Sebald, Georg; Lankl, Berthold; and Boshold, Klaus, 4,800,572, Cl. 375-14.000.

Bossart, Clayton J.; Fertig, Glenn H.; and Welker, Albert L., to Mine Safety Appliances Company. Liquid separator. 4,799,374, Cl. 73-1.00G.

Bosse, Reinhard: *See*—
Friese, Hans-Herbert; Pieper, Friedrich; and Bosse, Reinhard, 4,800,045, Cl. 260-400.000.

Bostock, Stephen B.: *See*—
Baxter, Anthony G. W.; Bostock, Stephen B.; and Greenwood, David, 4,799,960, Cl. 106-22.000.

Boudreau, Ronald R.: *See*—
Savas, Peter G.; Kiger, Virginia S.; and Boudreau, Ronald R., 4,800,020, Cl. 210-359.000.

Boutroy, Marc. Security device for transporting documents of value. 4,799,435, Cl. 109-25.000.

Bowen, Chester O.: *See*—
Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., 4,800,014, Cl. 208-157.000.

Bowers, Jack R., to Basler Electric Company. Electronic circuit for control of a voltage regulator of an electrical generator. 4,800,291, Cl. 307-87.000.

Boyer, Birdell T.: *See*—
Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., 4,799,437, Cl. 110-229.000.

Boyer, Ivon: *See*—
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

Boyer, Jean-Francois. Medicine based on fenofibrate, and a method of preparing it. 4,800,079, Cl. 424-482.000.

Bracy, Julie A. Sandbox and swimming pool playset. 4,799,665, Cl. 272-1.00R.

Bradford, Robert G.: *See*—
Steele, David; and Bradford, Robert G., 4,800,259, Cl. 235-483.000.

Brami, Max; and Mazarguil, Pierre. Method and equipment for making a rigid slab enabling to carry a building. 4,799,348, Cl. 52-742.000.

Bras, Johan C. M., to SKF Industrial Trading & Development Co. B.V. Lubrication device. 4,799,574, Cl. 184-27.100.

Brauers, Bert, to Goetze AG. Piston ring and method of making the same. 4,799,694, Cl. 277-140.000.

Braun Aktiengesellschaft: *See*—
Hickel, Sigrun; and Franke, Wolfgang, 4,799,626, Cl. 241-37.500.

Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, to BBC Brown, Boveri & Company, Limited. Method for data transmission via an electric distribution system and transmission system for carrying out the method. 4,800,363, Cl. 340-310.00A.

Brears, John H., to MacMillan Bloedel Limited. Measurement of variation in flute profile height. 4,800,286, Cl. 250-560.000.

Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, to Kulzer & Co. GmbH. Terminal for a radiation conductor. 4,799,753, Cl. 350-96.180.

Breivik, A. Norris: *See*—
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,799,307, Cl. 29-452.000.

Bremer, Fridtjof; and Muijderman, Everhardus, to U.S. Philips Corporation. Hydrodynamic spiral-grooved journal bearing for electromagnetically rotated and reciprocated compressor piston. 4,799,421, Cl. 92-162.00R.

Breslow, Jeffrey D.: *See*—
Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., 4,799,678, Cl. 273-1.00E.

Breuer Electric Mfg. Co.: *See*—
Fischer, Ernest J., 4,799,282, Cl. 15-98.000.

Bridges, William B.; and Bruno, William M., to United States of America, Navy. Dielectric waveguide using powdered material. 4,800,350, Cl. 333-239.000.

Bridgestone Corporation: *See*—
Kawajiri, Junichi, 4,799,523, Cl. 152-535.000.

Bristol-Myers Company: *See*—
Dillon, John L.; and Spector, Richard H., 4,800,226, Cl. 546-338.000.

British Gas Corporation: *See*—
Cook, Timothy; Craigen, Joseph G.; and Morgan, Clive A., 4,799,647, Cl. 251-356.000.

British Petroleum Company p.l.c., The: *See*—
Gerrard, Donald L., 4,799,786, Cl. 356-30.000.

British Telecommunications plc: *See*—
Ainslie, Benjamin J.; and Craig, Susan P., 4,799,946, Cl. 65-3.120.

Broadbent, Ronald W., to Amchem Products, Inc. Gloss enhancement of autodeposited coatings. 4,800,106, Cl. 427-388.100.

Brockman, John P.: *See*—
Stone, Kirby L.; Kneifel, R. W., II; and Brockman, John P., 4,799,981, Cl. 156-64.000.

Brodersen, John C. Method and apparatus for containment and/or directing the flow of spilled hazardous liquids. 4,799,821, Cl. 405-115.000.

Brodsky, Stuart: *See*—
Davis, Donald F.; Brodsky, Stuart; and Houska, Jeffrey, 4,799,927, Cl. 604-192.000.

Broockman, Eric C.; and Cato, Robert T., to International Business Machines Corporation. Halographic scanner having adjustable sampling rate. 4,800,256, Cl. 235-467.000.

Brose Fahrzeugteile GmbH & Co. KG: *See*—
Dinkel, Emil; Mann, Bernd; Prieser, Gunter; and Schneyer, Gerhard, 4,799,403, Cl. 74-788.000.

Broughton, George L.; Rogers, Duane E.; and Mate, David W., to Outboard Marine Corporation. Water jacketed exhaust relief system for marine propulsion devices. 4,799,905, Cl. 440-89.000.

Brouwer, Geert: *See—*
Houtman, Eliberthus; and Brouwer, Geert, 4,800,580, Cl. 378-71.000.

Brown, Christopher R. Proving safe operation. 4,800,507, Cl. 364-484.000.

Brown, David C. Slab-diffuser fiber incident energy concentrator. 4,799,748, Cl. 350-96.100.

Brown, John T., to Stadium Bags, Inc. Stadium seat cover. 4,799,731, Cl. 297-192.000.

Brownell, Keith H.: *See—*
Baker, Don R.; Walker, Francis H.; and Brownell, Keith H., 4,800,205, Cl. 514-346.000.

Broze, Guy; and Ouhadi, Trazollah, to Colgate-Palmolive Company. Liquid laundry detergent composition containing polyphosphate. 4,800,035, Cl. 252-99.000.

Broze, Guy; and Lysy, Regis, to Colgate-Palmolive Company. Acetylated sugar ethers as bleach activators detergency boosters and fabric softeners. 4,800,038, Cl. 252-174.170.

Bruce, Robert W., to Ford Motor Company. Manually controlled multiple speed ratio transmission. 4,799,399, Cl. 74-477.000.

Bruchez, Raymond J., Jr.; Eichhorn, Gunther; and Kiblinger, Elliott C., II, to United Technologies Corporation. Variable convergent/divergent nozzle. 4,799,623, Cl. 239-265.410.

Bruckner Apparatebau GmbH: *See—*
Schuierer, Manfred; and Koch, Werner, 4,799,367, Cl. 68-13.00R.

Brummer, Wolfgang: *See—*
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.

Brun, Jean-Louis: *See—*
Vinot, Bernard; Berrod, Gerard; and Brun, Jean-Louis, 4,799,549, Cl. 166-293.000.

Bruner, George M., Jr., to Tekbilt, Inc. Interactive video game of chance and player controlled subsystem therefor. 4,799,683, Cl. 273-138.00A.

Bruning, Werner, to Alfred Fischbach KG Kunststoff-SpritzguBwerk. Mixing device for pasty multicomponent materials. 4,799,801, Cl. 366-255.000.

Brunner, Michael G.; and Calhoun, Gregory L., to Westinghouse Electric Corp. Tube protection device. 4,799,305, Cl. 29-265.000.

Bruno, William M.: *See—*
Bridges, William B.; and Bruno, William M., 4,800,350, Cl. 333-239.000.

Brupbacher, John M.: *See—*
Christodoulou, Leontios; Nagle, Dennis C.; and Brupbacher, John M., 4,800,065, Cl. 420-129.000.

Bucher-Guyer AG: *See—*
Amstutz, Jean-Pierre, 4,799,352, Cl. 56-364.000.

Bucher, Robert, to Sulzer Brothers Limited. Weft yarn store for a loom. 4,799,517, Cl. 139-452.000.

Buckley, Margaret M., to FMC Corporation. Adjustable control station for aircraft loader. 4,799,848, Cl. 414-347.000.

Budzich, Tadeusz, to Caterpillar Inc. Load responsive control system adapted to use of negative load pressure in operation of system controls. 4,799,420, Cl. 91-529.000.

Buehler, Volker; Hofmann, Friedbert; and Heinz, Robert, to BASF Aktiengesellschaft. Preparation of ascorbic acid granules. 4,800,086, Cl. 424-497.000.

Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, to Toyota Jidosha Kabushiki Kaisha. Gas suspension system for easier start-up of a compressor. 4,799,707, Cl. 280-711.000.

Buna, Tibor; and Miller, William H., to Martin Marietta Corporation. Conical contact heat exchanger. 4,799,541, Cl. 165-78.000.

Bunting, Pamela M.: *See—*
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., 4,799,545, Cl. 166-246.000.

Bupp, James H., to Prime Computer, Inc. High frequency power converter having compact output transformer, rectifier and choke. 4,800,479, Cl. 363-48.000.

Burger, Karl H., to Neue Rotoprint GmbH. Sheet feeder for sheet-processing machines. 4,799,664, Cl. 271-277.000.

Burgess, Michael J.; Sewell, Robert A.; and Clifford, David P., to Dow Chemical Company, The. Substituted azo N-phenyl-N'benzoylureas and their use as insecticides and acaricides. 4,800,193, Cl. 514-150.000.

Burgess, Paul D., to Fly Fishing Technology Limited. Braided line. 4,799,417, Cl. 87-11.000.

Burlington Industries, Inc.: *See—*
Davis, James K.; Craycroft, Robert S.; and Lorenzo, Tina V., 4,799,935, Cl. 8-922.000.
Pierce, James M., Jr.; and Mallard, Jerry F., 4,800,503, Cl. 364-470.000.

Burr-Brown Corporation: *See—*
White, Robert L.; Highton, Frederick J.; Ito, Kazuo; and Miller, Gary L., 4,800,365, Cl. 341-119.000.

Burrows, Donald L.; and Milne, Edward J., to Everest & Jennings Canadian Limited. Cantilever weighing apparatus. 4,799,562, Cl. 177-229.000.

Burton, Colin R.; and Davies, Philip, to Ever Ready Limited. Battery-powered lamp. 4,800,472, Cl. 362-158.000.

Busch, Dieter, to Pruftechnik Dieter Busch & Partner GmbH & Co. Method and apparatus for determining and detecting data indicative of the condition of machines through a unique data probe including a test data probe portion and an identifying data sensing probe portion. 4,800,512, Cl. 364-551.010.

Bushey, Roger A.: *See—*
Marshall, Claire B.; Lake, Frank B.; and Bushey, Roger A., 4,800,131, Cl. 428-558.000.

Butler, John M.: *See—*
Ward, Robert T.; and Butler, John M., 4,800,314, Cl. 310-260.000.

Butler Manufacturing Company: *See—*
Mohr, Gregory L., 4,800,237, Cl. 174-48.000.

Byler, Eli A. Insulation support truss. 4,799,347, Cl. 52-712.000.

C & F Packing, Inc.: *See—*
Freda, Gerald; Bogacz, Joseph; Freda, Joseph; and Olson, Dennis, 4,800,094, Cl. 426-513.000.

Cabaraux, Emile: *See—*
Detournay, Jean-Paul; and Cabaraux, Emile, 4,800,008, Cl. 204-253.000.

Cain, William C.: *See—*
Kryder, Mark; Cain, William C.; and Meiklejohn, William H., 4,800,457, Cl. 360-113.000.

CALCOMP Inc.: *See—*
Lake, Ralph J., Jr.; Wiley, Franklyn L.; Coby, A. Daniel; and Pluth, John, Jr., 4,800,402, Cl. 346-139.00R.

Caldwell Manufacturing Company: *See—*
Westfall, Norman R.; Martini, James A.; and Habbersett, John I., 4,799,333, Cl. 49-446.000.

Calgon Corporation: *See—*
Hassick, Denis E.; and Miknevich, Joseph P., 4,800,039, Cl. 252-181.000.
Howe, Michael W., 4,799,969, Cl. 148-6.14R.

Calhoun, Gregory L.: *See—*
Brunner, Michael G.; and Calhoun, Gregory L., 4,799,305, Cl. 29-265.000.

Call, Wayne R.: *See—*
Batzer, Thomas H.; and Call, Wayne R., 4,799,692, Cl. 277-34.000.

Campardo, Giovanni: *See—*
Novosel, David; and Campardo, Giovanni, 4,800,297, Cl. 307-296.00R.

Campbell, Ken L. Clip track device for securing flexible sheets. 4,799,299, Cl. 24-462.000.

Campbell, Myrna. Medical tube securing device. 4,799,923, Cl. 604-179.000.

Canaby Technologies Corporation: *See—*
Davis, John R.; and Thurston, Marlin O., 4,799,763, Cl. 350-137.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Franklin, J. Barrie; and McMahon, Garfield W., 4,800,542, Cl. 367-154.000.

Canadian Patents & Development Ltd.: *See—*
Blais, Francois, 4,800,270, Cl. 250-235.000.
Blais, Francois, 4,800,271, Cl. 250-235.000.
Farmer, David M.; and Verrall, Jane A., 4,800,541, Cl. 367-424.000.

Canon Kabushiki Kaisha: *See—*
Akashi, Akira, 4,800,261, Cl. 250-204.000.
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.
Baxter, Anthony G. W.; Bostock, Stephen B.; and Greenwood, David, 4,799,960, Cl. 106-22.000.
Echizen, Hiroshi; Ota, Masakatsu; and Suzuki, Akiyoshi, 4,799,791, Cl. 356-121.000.
Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, 4,800,482, Cl. 364-140.000.
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, 4,800,413, Cl. 355-45.000.
Kanai, Masahiro; Hanna, Junichi; and Shimizu, Isamu, 4,800,173, Cl. 37-081.000.
Miyawaki, Mamoru, 4,799,750, Cl. 350-96.130.
Okada, Shinjiro; and Kanbe, Junichiro, 4,800,382, Cl. 340-784.000.
Okauchi, Shigeki; and Uehara, Tsukasa, 4,800,453, Cl. 360-99.020.
Ozaki, Masaharu; and Yonehara, Takao, 4,800,527, Cl. 365-182.000.
Riseman, John H., deceased; Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., 4,800,442, Cl. 358-280.000.
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.
Sato, Hideki; Komatsu, Teruo; and Sugiura, Yoshinori, 4,800,401, Cl. 346-108.000.
Sato, Yuichi, 4,800,591, Cl. 382-50.000.
Shikichi, Satoshi; Aoki, Akio; and Minoura, Kazuo, 4,800,546, Cl. 369-44.000.
Suzuki, Kenichi; and Minoura, Kazuo, 4,800,258, Cl. 235-479.000.
Takahashi, Junichi; and Itoh, Yuji, 4,799,783, Cl. 351-206.000.
Yoshino, Motoaki, 4,800,439, Cl. 358-257.000.

Canzoneri, Louis S.: *See—*
Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., 4,799,853, Cl. 414-730.000.

Capelle, Gerd: *See—*
Bellmer, Klaus; and Capelle, Gerd, 4,799,874, Cl. 425-131.100.

Capp, Randolph E.; Johnescu, Michael M.; Laudig, Ronald C.; Michael, George W.; and Smith, Donald L., to AMP Incorporated. Push on right angle connector. 4,799,900, Cl. 439-585.000.

Cardiac Pacemakers, Inc.: *See—*
DuFault, Robert A., 4,799,486, Cl. 128-419.0PG.
DuFault, Robert A., 4,799,493, Cl. 128-705.000.

Carl Freudenberg, Firma: *See—*
Hausdorf, Jorg; Kandler, Joachim; and Siekermann, Volker, 4,799,967, Cl. 134-38.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See*—
Erhardt, Manfred; and Loos, Herbert, 4,799,473, Cl. 125-11.0CD.
Carlin, Richard T.; and Dunbobbin, Brian R., to Air Products and Chemicals, Inc. Catalysts for absorptive air separation. 4,800,070, Cl. 423-210.500.
Carline, Wallace. Method and apparatus for cutting a submerged object into pieces. 4,799,826, Cl. 405-191.000.
Carlson, Richard A.: *See*—
DiGiovacchino, David J.; Carlson, Richard A.; Jonas, Rodger H.; and Marion, Sheila, 4,800,096, Cl. 426-577.000.
Carmosin, Richard J.; and Carson, John R., to McNeilab, Inc. Hexahydropyrrolizine compounds useful as analgesics. 4,800,207, Cl. 514-413.000.
Carnegie-Mellon University: *See*—
Kryder, Mark; Cain, William C.; and Meiklejohn, William H., 4,800,457, Cl. 360-113.000.
Carome, Edward F., to Litton Systems, Inc. Fiber optic gradient hydrophone and method of using same. 4,799,752, Cl. 350-96.150.
Carroll, Thomas J.; and Kehoe, Gary S., to Nabisco Brands, Inc. Stabilized APM in comestibles. 4,800,095, Cl. 426-548.000.
Carson, John R.: *See*—
Carmosin, Richard J.; and Carson, John R., 4,800,207, Cl. 514-413.000.
Carter, Jeff C.; Federico, Anthony M.; and Comparetta, Christopher, to Xerox Corporation. Task control manager. 4,800,521, Cl. 364-900.000.
Casali, Gianpaolo. Bootie testing machine. 4,799,384, Cl. 73-45.500.
Cassat, Robert, to Ciba-Geigy Corporation. Metallizable substrate composites and printed circuits produced therefrom. 4,799,996, Cl. 162-136.000.
Castilla, Antonio J. Portable luggage carrier for automobiles. 4,799,609, Cl. 224-42.070.
Caterpillar Inc.: *See*—
Budzich, Tadeusz, 4,799,420, Cl. 91-529.000.
Cato, Robert T.: *See*—
Broockman, Eric C.; and Cato, Robert T., 4,800,256, Cl. 235-467.000.
CDK Corporation: *See*—
Suzuki, Shigeaki; and Nozaki, Tatsuya, 4,800,254, Cl. 235-380.000.
Cegedur Societe de Transformation de l'Aluminum Pechiney: *See*—
Meyer, Philippe, 4,799,976, Cl. 148-20.300.
Centennial Machine Company, Inc.: *See*—
Harben, Grover S., III, 4,799,292, Cl. 17-11.000.
Centre National De La Recherche Scientifique: *See*—
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazalet; and Torguet, Roger, 4,799,777, Cl. 350-358.000.
Cetus Corporation: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.
Chang, Chung N., to Polar Spring Corporation. Dual freezing chamber system and method for water purification. 4,799,945, Cl. 62-532.000.
Chanock, Robert: *See*—
Prince, Gregory; Chanock, Robert; and Hemming, Val G., 4,800,078, Cl. 424-86.000.
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, to Matra. Optical data transmission with frequency multiplexing. 4,800,556, Cl. 370-3.000.
Charmac, Inc.: *See*—
McAfee, Thomas H., 4,799,529, Cl. 160-206.000.
Charmasson & Holz: *See*—
Vicino, Robert K., 4,799,982, Cl. 156-71.000.
ChemCat Corporation: *See*—
Elvin, Frank J.; Otterstedt, Jan-Erik; and Yoo, Jin S., 4,800,185, Cl. 502-26.000.
Chen, James C.; Wong, Wah S.; and Pao, Cheng K., to Hughes Aircraft Company. Two-terminal semiconductor diode arrangement. 4,800,420, Cl. 357-76.000.
Cherry-Mikroschalter GmbH: *See*—
Murmann, Gunter; and Mertel, Walter H., 4,800,245, Cl. 200-345.000.
Chestnut, Paul B., to Whirlpool Corporation. Modular home ice maker test apparatus. 4,799,362, Cl. 62-127.000.
Chevron Research Company: *See*—
Laxo, Darryl E., 4,799,331, Cl. 49-31.000.
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., 4,799,545, Cl. 166-246.000.
Chew, Meng-Sang: *See*—
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.
Chiarottino, Wolmer: *See*—
Appiano, Silvano; Chiarottino, Wolmer; Pozzi, Mauro; and Reali, Aldo, 4,800,423, Cl. 358-21.00R.
Chin, Seok W.: *See*—
Lee, Eon H.; and Chin, Seok W., 4,800,246, Cl. 219-10.55F.
Chodzko, Richard A.: *See*—
Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., 4,799,780, Cl. 350-600.000.
Chow, Mark K.: *See*—
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., 4,799,625, Cl. 241-30.000.
Christian, Bruneel: *See*—
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazalet; and Torguet, Roger, 4,799,777, Cl. 350-358.000.
Christian, Felicia M.; and Spector, George. Stencil device for post cards. 4,799,317, Cl. 33-565.000.
Christodoulou, Leontios; Nagle, Dennis C.; and Brupbacher, John M., to Martin Marietta Corporation. Process for making ceramic-ceramic composites and products thereof. 4,800,065, Cl. 420-129.000.
Chuang, Jo-Yu, to TRW Inc. Elliptical thread design. 4,799,844, Cl. 411-414.000.
Chung, Tai-Shung: *See*—
McMahon, Paul E.; and Chung, Tai-Shung, 4,799,985, Cl. 156-166.000.
Ciappi, Rossella: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.
Ciba Corning Diagnostics Corp.: *See*—
Herrmann, Raymond J., 4,799,599, Cl. 215-307.000.
Ciba-Geigy Corporation: *See*—
Beffa, Fabio; and Koller, Josef, 4,799,933, Cl. 8-404.000.
Cassat, Robert, 4,799,996, Cl. 162-136.000.
Kaschig, Jurgen, 4,800,224, Cl. 546-12.000.
Ciba-Giegy AG: *See*—
Marzinotto, Francesco, 4,799,722, Cl. 294-64.100.
Cichanowski, Michael F. Fiber and resin construction. 4,800,114, Cl. 428-175.000.
Cimbalik, David J.: *See*—
Strong, Michael R.; Sell, James C., Jr.; and Cimbalik, David J., 4,799,513, Cl. 137-625.480.
Cincinnati Milacron Inc.: *See*—
Stone, Kirby L.; Kneifel, R. W., II; and Brockman, John P., 4,799,981, Cl. 156-64.000.
Cinzori, Carl; Williams, Carl, Jr.; Mitchell, Clair E.; and Striker, David L., to Ford Motor Company. Method of making a rectifier and control module for an alternator. 4,799,309, Cl. 29-596.000.
Clairol Incorporated: *See*—
Lim, Mu-Ill; and Anderson, James S., 4,799,934, Cl. 8-414.000.
Clapp, Timothy D.; and McCormick, William H., to Otis Engineering Corporation. Pressure actuated cleaning tool. 4,799,554, Cl. 166-312.000.
Claude, John P.: *See*—
Ingle, Frank W.; and Claude, John P., 4,800,317, Cl. 310-334.000.
Clay, Howard: *See*—
Lindau, Mark S.; and Clay, Howard, 4,799,701, Cl. 280-87.041.
Cleand, Maurice: *See*—
Baize, Dominique; Cleand, Maurice; and Minard, Serge, 4,800,484, Cl. 364-200.000.
Clifford, David G., Jr.: *See*—
Rosar, George C.; and Clifford, David G., Jr., 4,800,348, Cl. 333-202.000.
Clifford, David P.: *See*—
Burgess, Michael J.; Sewell, Robert A.; and Clifford, David P., 4,800,195, Cl. 514-150.000.
CMI International, Inc.: *See*—
Tromp, Corwin M., 4,799,381, Cl. 73-146.000.
Coby, A. Daniel: *See*—
Lake, Ralph J., Jr.; Wiley, Franklyn L.; Coby, A. Daniel; and Pluth, John, Jr., 4,800,402, Cl. 346-139.00R.
Coca-Cola Company, The: *See*—
Johnson, Donald A.; and Conklin, Dave, 4,800,492, Cl. 364-403.000.
Cocchiara, Ronald P.: *See*—
Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., 4,799,853, Cl. 414-730.000.
Coffindaffer, Timothy W.; and Wong, Louis F., to Procter & Gamble Company, The. Curable amine functional silicone for fabric wrinkle reduction. 4,800,026, Cl. 252-8.800.
Cohn, Robert J.: *See*—
Sudimak, Michael J.; and Cohn, Robert J., 4,799,818, Cl. 403-107.000.
Colarusso, Peter R. Three-wheeled cycle. 4,799,704, Cl. 280-267.000.
Colby, Kenneth W.: *See*—
Vinberg, Anders B.; and Colby, Kenneth W., 4,800,510, Cl. 364-521.000.
Coleman Company, Inc., The: *See*—
Lucius, John H., 4,799,908, Cl. 441-115.000.
Coleman, Richard A.: *See*—
Kilbane, Farrell M.; Coleman, Richard A.; Dunbar, Frank C.; and Gibson, Alan F., 4,800,135, Cl. 428-653.000.
Colgate-Palmolive Company: *See*—
Broze, Guy; and Ouhadi, Trazollah, 4,800,035, Cl. 252-99.000.
Broze, Guy; and Lysy, Regis, 4,800,038, Cl. 252-174.170.
Collet, James R. Sleeve type casing head read adapter. 4,799,714, Cl. 285-145.000.
Collier, Richard J., to Kent Scientific; and Industrial Project Ltd. Apparatus for detecting the resonant frequency of a bone. 4,799,498, Cl. 128-774.000.
Collins, Malcolm G.; and Parry, Christopher S., to Metal Box plc. Method of securing handles to plastics containers. 4,799,306, Cl. 29-453.000.
Collins, Malcolm G.; and Rayner, Adrien P., to Metal Box p.l.c. Plug lid for a container. 4,799,602, Cl. 220-307.000.
Combi Co., Ltd.: *See*—
Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, 4,800,310, Cl. 310-105.000.
Combustion Engineering, Inc.: *See*—
Lassiter, Perry B.; and Rea, Larry B., 4,800,181, Cl. 501-89.000.
Riley, Brian, 4,799,936, Cl. 29-623.100.

Commercial Decal, Inc.: *See—*
Schneider, Marvin; Blanco, Louis A.; and Milo, Salvatore A., 4,800,247, Cl. 219-10.55E.
Comparetta, Christopher: *See—*
Carter, Jeff C.; Federico, Anthony M.; and Comparetta, Christopher, 4,800,521, Cl. 364-900.000.
Computer Associates International, Inc.: *See—*
Vinberg, Anders B.; and Colby, Kenneth W., 4,800,510, Cl. 364-521.000.
Conax Florida Corporation: *See—*
Jankowiak, Roman; and Lutocka, John A., Jr., 4,799,907, Cl. 441-42.000.
Conklin, Dave: *See—*
Johnson, Donald A.; and Conklin, Dave, 4,800,492, Cl. 364-403.000.
Conmed: *See—*
Abraham, William W.; and Gentelia, John S., 4,799,480, Cl. 128-303.130.
Connec AG Systembau-Technik: *See—*
Swoboda, Heilmuth, 4,799,819, Cl. 403-252.000.
Conoco Inc.: *See—*
Corn, Kruger C.; and Raney, Gary L., 4,800,539, Cl. 367-72.000.
Considine, William H., to Stonefield Systems Plc. Data processing arrays and a method of producing them. 4,800,383, Cl. 340-825.790.
Contel Information Systems, Inc.: *See—*
Florea, Michael; Foster, Stephen C.; and Bisaga, Gary J., 4,800,559, Cl. 370-94.000.
Continental Grain Company: *See—*
Hartsuiker, Hendrik; and Knapp, Dorcel W., 4,799,584, Cl. 198-709.000.
Continental Group, Inc., The: *See—*
Mahaffy, John W., 4,799,723, Cl. 294-87.200.
Convergent Technologies: *See—*
Lowenthal, Richard W.; Reeber, Larke E.; Hoffman, Drew S.; and Ramsay, Michael, 4,800,380, Cl. 340-750.000.
Cook, Timothy; Craigen, Joseph G.; and Morgan, Clive A., to British Gas Corporation. Valve assembly for controlling fluid flow. 4,799,647, Cl. 251-356.000.
Cool Lux Lighting Industries, Inc.: *See—*
Panagiotou, George N., 4,800,475, Cl. 362-294.000.
Cooper, George R. Videocassette security-lock-box. 4,799,370, Cl. 70-63.000.
Cooper, Lance A.: *See—*
Crump, Druce K.; Cooper, Lance A.; and Hopkins, Thomas M., 4,799,995, Cl. 162-76.000.
Cooperatieve Vereniging Suiker Unie U.A.: *See—*
Bakker, Age; Schepers, Genesius J. J. M.; and Koerts, Kees, 4,799,965, Cl. 127-46.200.
Copal Electronics Co., Ltd.: *See—*
Watanabe, Masaru; and Tabei, Ichiro, 4,799,628, Cl. 242-84.420.
Copperweld Corporation: *See—*
McDougall, Wallace R.; and Seastone, James C., 4,799,971, Cl. 148-12.00B.
Cordiano, Ettore; Garnero, Pierino; and Frigo, Domenico, to CORINT S.r.l.; and GARRIG 4 S.s. Pneumatic vane pumps with oil separation. 4,799,869, Cl. 418-97.000.
Corfin Technologies Inc.: *See—*
Cornellier, J. Rene, 4,799,450, Cl. 118-63.000.
CORINT S.r.l.: *See—*
Cordiano, Ettore; Garnero, Pierino; and Frigo, Domenico, 4,799,869, Cl. 418-97.000.
Corn, Kruger C.; and Raney, Gary L., to Conoco Inc. Method and apparatus for seismic dip filtering. 4,800,539, Cl. 367-72.000.
Cornelissen, Bernardus H. J., to U.S. Philips Corp. Integrated memory circuit. 4,800,534, Cl. 365-233.000.
Cornellier, J. Rene, to Corfin Technologies Inc. Tinning system for surface mount components. 4,799,450, Cl. 118-63.000.
Corning Glass Works: *See—*
Keck, Donald B.; Lyons, Donald R.; and Nolan, Daniel A., 4,799,949, Cl. 65-3.120.
Lachman, Irwin M.; and Patil, Mallanagouda D., 4,800,187, Cl. 502-64.000.
Cosco, Inc.: *See—*
Knoedler, Roy E.; Morton, Kenneth P.; and Schroer, Charles E., 4,799,700, Cl. 280-87.051.
Costantino, Cirillo L.: *See—*
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.
Coto, Guillermo: *See—*
Welter, Curtis; Coto, Guillermo; and Patrikios, Michael, 4,799,614, Cl. 228-1.100.
Couturier, Michel: *See—*
Dagard, Philippe; and Couturier, Michel, 4,799,538, Cl. 165-47.000.
Cox, Jan. J. F. M.; and Ensing, Hendrik, to Oce-Nederland B.V. Method and means for determining a measure of the surface potential of a medium charged by means of a corona charging device. 4,800,337, Cl. 324-455.000.
Cox & Wright Limited: *See—*
Peake, Roy P., 4,799,411, Cl. 83-50.000.
CPC International Inc.: *See—*
Danzig, Morris J.; and Kinnersley, Alan M., 4,799,953, Cl. 71-98.000.
Craftsman Printing Company: *See—*
Nail, James W., 4,799,661, Cl. 270-54.000.
Craig, Philip A.; Haelsig, Richard T.; Kent, John D.; and Schmoker, Duane S., to Nuclear Packaging, Inc. On-site concrete cask storage system for spent nuclear fuel. 4,800,062, Cl. 376-272.000.
Craig, Susan P.: *See—*
Ainslie, Benjamin J.; and Craig, Susan P., 4,799,946, Cl. 65-3.120.
Craigen, Joseph G.: *See—*
Cook, Timothy; Craigen, Joseph G.; and Morgan, Clive A., 4,799,647, Cl. 251-356.000.
Cray Research, Inc.: *See—*
Jacobson, Terry W., 4,800,374, Cl. 340-649.000.
Craycroft, Robert S.: *See—*
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Credix Corporation: *See—*
Suzuki, Shigeaki; and Nozaki, Tatsuya, 4,800,254, Cl. 235-380.000.
Crevling, R. Lent, Jr.: *See—*
Wacek, Rudolph W.; and Crevling, R. Lent, Jr., 4,800,312, Cl. 310-239.000.
Crinon, Regis J.; and Jenq, Yih-Chyun, to Tektronix, Inc. Method and apparatus for carrying out a dithering operation. 4,800,443, Cl. 338-280.000.
Crosfield Electronics Limited: *See—*
Yeomans, Andrew J. V., 4,800,379, Cl. 340-731.000.
Crossland, William A.; Davey, Anthony B.; and Bone, Matthew F., to STC PLC. Ferroelectric liquid crystal cells having a helical liquid crystal structure. 4,799,775, Cl. 350-350.00S.
Crowell, Christopher S., to Structural Graphics, Inc. Spectral image viewing device. 4,799,764, Cl. 350-162.180.
Crowley, Ivan P., to Femlib Medical Devices (Proprietary) Limited. Urological device. 4,799,928, Cl. 604-329.000.
Cruchon, Jean-Claude: *See—*
Gurcan, Mustafa; and Cruchon, Jean-Claude, 4,800,349, Cl. 333-208.000.
Cruess, Michael W.: *See—*
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.
Cruickshank, John S., to L.B.P. Partnership C.P.I. Corporation, The. Method and apparatus for the inspection of tubular members. 4,800,104, Cl. 427-230.000.
Crump, Druce K.; Cooper, Lance A.; and Hopkins, Thomas M., to Dow Chemical Company, The. Scale inhibition formulations for kraft digesters. 4,799,995, Cl. 162-76.000.
Csonka, Paul L.; and Tatchyn, Roman O., to State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, The. Micropole undulator. 4,800,353, Cl. 335-210.000.
Cuminale, Francesco, to Alcan Aluminio Do Brasil, S.A. Pressure regulating valve for presure cooker. 4,799,508, Cl. 137-534.000.
Cupo, Robert L., to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Equalization arrangement. 4,800,573, Cl. 375-14.000.
Curlett, Harry B., to Pangaea Enterprises, Inc. Drill pipes and casings utilizing multi-conduit tubulars. 4,799,544, Cl. 166-65.100.
Cycles Peugeot: *See—*
Beley, Serce; and Fourrey, Francois, 4,799,733, Cl. 297-379.000.
D.O.M. Associates, Inc.: *See—*
Fateley, William G., 4,799,795, Cl. 356-310.000.
Dagard, Philippe; and Couturier, Michel, to Framatome. Device for condensing steam under pressure and its application to the cooling of a nuclear reactor after an incident. 4,799,538, Cl. 165-47.000.
D'Agosto, Nicholas A., III; Smith, Steven M.; and Jachmann, Emil F., to Dictaphone Corporation. Method and apparatus for creating and storing telephone directory listings. 4,800,582, Cl. 379-216.000.
Dahm, Dennis R.: *See—*
McKay, Robert S.; and Dahm, Dennis R., 4,799,916, Cl. 446-444.000.
Dahmen, Theo: *See—*
Klee, Helmut; Haas, Hans; Kowalski, Werner; and Dahmen, Theo, 4,800,055, Cl. 264-118.000.
Dai-ichi Seiko Kabushiki Kaisha: *See—*
Mogi, Hiroyuki; and Ozawa, Kazuhisa, 4,799,897, Cl. 439-264.000.
Daikoku, Takashi: *See—*
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.
Daimler-Benz Aktiengesellschaft: *See—*
Bopp, Stefan, 4,799,571, Cl. 180-294.000.
Wawra, Helmut; Scheurenbrand, Dieter; and Kleineberg, Wolfgang, 4,799,509, Cl. 137-587.000.
Daishowa Seiki Co., Ltd.: *See—*
Kubo, Haruaki; Umeda, Mitsuru; and Iwakoshi, Hiromitsu, 4,799,838, Cl. 409-234.000.
Dalton, Jeffrey L.: *See—*
Sallavanti, Robert A.; Dalton, Jeffrey L.; and Olsen, Sharon M., 4,800,122, Cl. 428-412.000.
Dams, Michael J.: *See—*
Davis, James H.; and Dams, Michael J., 4,800,124, Cl. 428-391.000.
Dancy, Carl Livingston, Sr.: *See—*
Walker, Timothy D.; and Dancy, Steven A., 4,799,576, Cl. 188-84.000.
Dancy, Steven A.: *See—*
Walker, Timothy D.; and Dancy, Steven A., 4,799,576, Cl. 188-84.000.

Daniel Aguilo Panisello S.A.: *See*—
Vilella, Antonio R., 4,799,620, Cl. 229-191.000.
Danieli & C. Officine Meccaniche SpA: *See*—
Geremia, Nonini, 4,799,426, Cl. 100-218.000.
Dannoura, Sadayuki: *See*—
Ueno, Toyoaki; Dannoura, Sadayuki; and Uchida, Masashi, 4,799,534, Cl. 164-314.000.
Danzig, Morris J.; and Kinnersley, Alan M., to CPC International Inc. Method for regulating plant growth using sulfur-containing organic acids. 4,799,953, Cl. 71-98.000.
Dapperheld, Steffen; Heumuller, Rudolf; and Wildt, Manfred, to Hoechst Aktiengesellschaft. Electrochemical process for the replacement of halogen atoms in an organic compound. 4,800,012, Cl. 204-73.00R.
Dasai, Masashi, to Idemitsu Kosan Co., Ltd. Lubricating oil composition. 4,800,029, Cl. 252-32.500.
DataTrak, Inc.: *See*—
Imran, Mir A., 4,800,255, Cl. 235-382.000.
Daussan, Andre : *See*—
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 4,799,652, Cl. 266-275.000.
Daussan et Compagnie: *See*—
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 4,799,652, Cl. 266-275.000.
Daussan, Gerard: *See*—
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 4,799,652, Cl. 266-275.000.
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , to Daussan et Compagnie. Lining for protecting the interior of a metallurgical vessel and a method for forming said lining. 4,799,652, Cl. 266-275.000.
Davenport, Michael L. Collet holder. 4,799,615, Cl. 228-44.700.
Davey, Anthony B.: *See*—
Crossaland, William A.; Davey, Anthony B.; and Bone, Matthew F., 4,799,775, Cl. 350-350.00S.
Davidson, John F.; Niranjan, Keshavan; and Pandit, Aniruddha B., to National Research Development Corporation. Impellers. 4,799,862, Cl. 416-242.000.
Davies, Philip: *See*—
Burton, Colin R.; and Davies, Philip, 4,800,472, Cl. 362-158.000.
Davila, Fernando E.; and Schmid, Richard G., to Zenith Electronics Corporation. Test fixture for circuit components on circuit boards. 4,800,335, Cl. 324-158.00F.
Davis, Charles M.: *See*—
Freal, James B.; Zarobila, Clarence J.; and Davis, Charles M., 4,800,267, Cl. 250-227.000.
Davis, Dennis W.; and Davis, Russell D. Projected image tag game. 4,799,687, Cl. 273-312.000.
Davis, Donald F.; Brodsky, Stuart; and Houska, Jeffrey. Needle guide and puncture protector. 4,799,927, Cl. 604-192.000.
Davis, Earl K.; Drye, James E.; and Reed, David J., to Motorola, Inc. Glass bonding means and method. 4,800,421, Cl. 357-80.000.
Davis, James H.; and Dams, Michael J., to Dow Corning, Ltd. Silcone elastomer-forming compositions. 4,800,124, Cl. 428-391.000.
Davis, James K.; Craycroft, Robert S.; and Lorenzo, Tina V., to Burlington Industries, Inc. Method for dyeing in high-boiling nonionic solvents. 4,799,935, Cl. 8-922.000.
Davis, John R.; and Thurston, Marlin O., to Canaby Technologies Corporation. Paraxial stereoscopic projection system. 4,799,763, Cl. 350-137.000.
Davis, Russell D.: *See*—
Davis, Dennis W.; and Davis, Russell D., 4,799,687, Cl. 273-312.000.
Day, Gene F., to Precision Image Corporation. Liquid toner recycling system and method. 4,799,452, Cl. 118-645.000.
De La Rue Systems, Limited: *See*—
Simpson-Davis, Raymon W.; and Bennett, Allan, 4,800,260, Cl. 235-487.000.
Deak, Gedeon I., to Du Pont de Nemours, E. I., and Company. Multilayer plastic container. 4,800,129, Cl. 428-474.400.
Dean, Raymond S.: *See*—
Barabino, William A.; and Dean, Raymond S., 4,799,815, Cl. 401-132.000.
de Araujo, Carlos P.: *See*—
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., 4,800,543, Cl. 368-10.000.
De Bernardi, Franco, to Duplomatic S.p.A. Revolving turret particularly for lathe machining centers. 4,799,410, Cl. 82-36.00A.
De Bortoli, Giuseppe: *See*—
Baggio, Giorgio; and De Bortoli, Giuseppe, 4,799,297, Cl. 24-68.0SK.
de Carbon, Christian B. Telescopic hydraulic shock absorber with temperature sensitive wire to control damping. 4,799,577, Cl. 188-277.000.
Deere & Company: *See*—
Ankum, Robert H.; and Olson, Jay H., 4,799,291, Cl. 16-259.000.
Kramer, Kenneth D.; and Sparks, Gregory E., 4,799,645, Cl. 251-30.040.
Myers, Thomas W.; and Jacobson, Earl C., 4,799,706, Cl. 280-504.000.
Deering, Michael F., to Schlumberger Systems and Services, Inc. Video stream processing frame buffer controller. 4,800,431, Cl. 358-160.000.
DeFazio, John J.; and McNamara, Timothy G., to International Business Machines Corporation. High performance clock system error detection and fault isolation. 4,800,564, Cl. 371-61.000.
Degussa AG: *See*—
Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, 4,800,044, Cl. 260-399.000.
De Hair, Johannes T. W.: *See*—
Van Kemenade, Johannes T. C.; De Hair, Johannes T. W.; and Berns, Everhardus G., 4,800,319, Cl. 313-487.000.
Dehganpour, Sam; and Pelley, Perry H., III, to Motorola, Inc. Address buffer circuit for a dram. 4,800,531, Cl. 365-222.000.
DeHont, Raymond J.: *See*—
Giusti, Giambattista; Reinauer, Thomas V.; and DeHont, Raymond J., 4,799,943, Cl. 55-308.000.
Delphi Company Ltd.: *See*—
Muramatsu, Masayauki; and Morozumi, Toshiki, 4,800,346, Cl. 333-140.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lau, Wan F., to Wisconsin Alumni Research Foundation. Method of inducing the differentiation of malignant cells with secosterol. 4,800,198, Cl. 514-167.000.
Demura, Hiroshi; Kawahashi, Akira; Hayashi, Kazumi; and Kokubu, Sadao, to Toyota Jidosha Kabushiki Kaisha. Liquid crystal antidazzle mirror. 4,799,769, Cl. 350-331.00R.
Denault, Wesley C.: *See*—
Holm, David A.; and Denault, Wesley C., 4,799,648, Cl. 254-420.000.
Denayrolles, Yves: *See*—
Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, 4,799,788, Cl. 356-45.000.
d'Entremont, Alice M.: *See*—
Riseman, John H., deceased; Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., 4,800,442, Cl. 358-280.000.
Desai, Kamalesh S., to International Business Machines Corporation. Multilayer ceramic substrate and process for forming therefor. 4,799,983, Cl. 156-89.000.
Desai, Mukesh: *See*—
Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., 4,800,397, Cl. 346-1.100.
Desanto, David A. Storage case for keys with plural velcro retainers. 4,799,587, Cl. 206-37.600.
Desbos, Gilbert, to OTV (Omnium de Traitements et de Valorisation). Process for biologically purifying sewage on a bed of granular material. 4,800,021, Cl. 210-605.000.
Designs for Vision, Inc.: *See*—
Feinbloom, Richard E., 4,799,793, Cl. 356-127.000.
DeSisto, Richard E.: *See*—
Warner, Robin L.; and DeSisto, Richard E., 4,800,313, Cl. 310-242.000.
Despic, Aleksandar; and Krsmanovic, Kosta. Electrochemical cell with moving electrode. 4,800,009, Cl. 204-225.000.
Deters, Joseph C.: *See*—
Eckenhoff, James B.; Theeuwes, Felix; and Deters, Joseph C., 4,800,056, Cl. 264-129.000.
Detournay, Jean-Paul; and Cabaraux, Emile, to Solvay & Cie. Electrolyaer of the filter-press type. 4,800,008, Cl. 204-253.000.
Deurloo, Johannis M., to N.K.F. Groep B.V. Electrical connector with safety partition. 4,799,903, Cl. 439-696.000.
Deutsch, Robert W., to Motorola, Inc. Auto-calibrated sensor system. 4,800,513, Cl. 364-571.020.
Deutsche Thomson-Brandt GmbH: *See*—
Laufer, Helmut, 4,800,553, Cl. 369-263.000.
Plantholt, Martin, 4,800,427, Cl. 358-141.000.
Dewberry, Larry S.; and Schlipp, Richard H., to Waukesha Rubber Company, Inc. Quick mount resilient finger for poultry plucking apparatus or the like. 4,799,293, Cl. 17-11.10R.
Diafoil Company, Limited: *See*—
Utsumi, Shigeo, 4,799,772, Cl. 350-339.00R.
Diamond Shamrock Chemical Company: *See*—
Papalos, John G., 4,800,229, Cl. 558-92.000.
Diaz-De-Guerenu-Aguirrebeitia, Pablo. Apparatus for stripping electrical wires and the like. 4,799,406, Cl. 81-9.400.
DiBiase, Stephen A.; and Pialet, Joseph W., to Lubrizol Corporation, The. Sulfur-containing lubricant and functional fluid compositions. 4,800,031, Cl. 252-47.500.
Dictaphone Corporation: *See*—
D'Agosto, Nicholas A., III; Smith, Steven M.; and Jachmann, Emil F., 4,800,582, Cl. 379-216.000.
Dier, Stephen A.: *See*—
Prinz, Thomas K.; and Dier, Stephen A., 4,799,303, Cl. 29-157.10R.
Diesel Equipment Limited: *See*—
Martin, Roger J., 4,799,873, Cl. 425-73.000.
DiGiovacchino, David J.; Carlson, Richard A.; Jonas, Rodger H.; and Marion, Sheila, to General Foods Corporation. Pectin gelling composition. 4,800,096, Cl. 426-577.000.
Dillon, John L.; and Spector, Richard H., to Bristol-Myers Company. Process intermediate for the preparation of encainide. 4,800,226, Cl. 546-338.000.
Dillon, Robert F.; and Warde, Cardinal, to Optron Systems, Inc. Completely cross-talk free high spatial resolution 2D bistables light modulation. 4,800,263, Cl. 250-213.00R.
DiMarco, Brian A.: *See*—
Beatty, Johnny W.; and DiMarco, Brian A., 4,799,760, Cl. 350-96.230.
Dinkel, Emil; Mann, Bernd; Prieser, Gunter; and Schneyer, Gerhard, to Brose Fahrzeugteile GmbH & Co. KG. Adjusting gear in motor vehicles. 4,799,403, Cl. 74-788.000.

D'Innocenzio, Joseph: *See*—
Transue, James A.; Pyna, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., 4,799,481, Cl. 128-325.000.
Dinsdale, John C.: *See*—
Gaynor, Edwin; and Dinsdale, John C., 4,799,896, Cl. 439-232.000.
Dipl.-Ing. Karl Rekers Maschinenbau, Firma: *See*—
Rekers, Karl, 4,799,724, Cl. 294-87.260.
Di Rosa, Gaetano, to Fata European Group S.p.A. Automatic system for assembly and welding metal sheet bodies, particularly car bodies, suitable for high mass production. 4,800,249, Cl. 219-79.000.
Dittakavi, Ashok: *See*—
Thompson, Barbara J.; and Dittakavi, Ashok, 4,799,890, Cl. 434-304.000.
Dittrich, Gerd, to Saar-Hartimetall und Werkzeuge GmbH. Extruder. 4,800,536, Cl. 366-78.000.
Dixon, George; and Eaves, Henry W., to Binks Bullows Limited; and Spencer & Co., Limited. Gas filter. 4,799,944, Cl. 55-446.000.
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., to Teledyne Industries, Inc. Multilayer combined rigid and flex printed circuits. 4,800,461, Cl. 361-398.000.
Dobbins, Bob M.: *See*—
Reger, Philip R.; and Dobbins, Bob M., 4,800,389, Cl. 342-175.000.
Dockrey, Jasper W., to Motorola, Inc. Process for preferentially etching polycrystalline silicon. 4,799,991, Cl. 156-643.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Kroniger, Wilhelm, 4,799,575, Cl. 188-71.600.
Doe, Peter H.: *See*—
Mumallah, Naim A.; and Doe, Peter H., 4,799,548, Cl. 166-288.000.
Doering, Egon L., to Shell Oil Company. Synthesis gas generation complex and process. 4,799,356, Cl. 60-648.000.
Doi, Katsumi. Machine tool. 4,799,835, Cl. 409-219.000.
Doleschall, Sandor: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Dombroski, Amy: *See*—
Glass, Michael; Hoholick, Joseph; Dombroski, Amy; and Faust, Steven M., 4,800,091, Cl. 426-3.000.
Dommerud, Svein A., to A/S Apotekernes Faellesindkjop. Folding stretcher. 4,799,274, Cl. 5-82.00R.
Donnelly Corporation: *See*—
Gahan, Edward A., 4,799,768, Cl. 350-279.000.
Donovan, Paul G., to Northern Telecom Limited. Pin insertion support member for circuit boards. 4,799,659, Cl. 269-289.00R.
Dorland, Hendricus A. H., to U.S. Philips Corp. Saturating bipolar switch circuit for telephone dial pulsing. 4,800,585, Cl. 379-364.000.
Dornier GmbH: *See*—
Kramer, Bernhard, 4,799,653, Cl. 267-136.000.
Zimmer, Herbert, 4,799,859, Cl. 416-20.00R.
Dorombozi, Laszlo : *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.
Dorr-Oliver Incorporated: *See*—
Krishnaswamy, Prem; and Hoyack, Mark E., 4,800,017, Cl. 210-219.000.
Doughty, Darrell G.: *See*—
Kowcz, Alexandra; and Doughty, Darrell G., 4,800,197, Cl. 514-162.000.
Douglas, Lawrence M., to Polaroid Corporation. Electronic image printing apparatus. 4,800,400, Cl. 346-107.00R.
Dover Industries, Inc.: *See*—
Reed, Charles F.; and Parker, Valery, 4,799,696, Cl. 279-50.000.
Dow Chemical Company, The: *See*—
Bertram, James L.; Myles, Willie L.; and Kubisiak, Michael P., 4,800,215, Cl. 523-414.000.
Burgess, Michael J.; Sewell, Robert A.; and Clifford, David P., 4,800,195, Cl. 514-150.000.
Crump, Druce K.; Cooper, Lance A.; and Hopkins, Thomas M., 4,799,995, Cl. 162-76.000.
Karbowski, Robert J.; Erickson, Anita S.; Gartner, Charles D.; and Roy, Kathleen A., 4,800,082, Cl. 424-409.000.
Pearson, Norman R.; Bartley, Shannon L.; and Kleschick, William A., 4,799,952, Cl. 71-92.000.
Rose, Gene D.; Teot, Arthur S.; and Foster, Kenneth L., 4,800,036, Cl. 252-102.000.
Tasset, Emmett L., 4,800,186, Cl. 502-33.000.
Dow Corning Corporation: *See*—
Marko, Ollie W., 4,800,221, Cl. 528-10.000.
Plueddemann, Edwin P., 4,800,125, Cl. 428-405.000.
Strong, Michael R.; Puder, Allen T.; and Wieck, Ronald W., 4,799,377, Cl. 73-40.000.
Strong, Michael R.; Sell, James C., Jr.; and Cimbalik, David J., 4,799,513, Cl. 137-625.480.
Dow Corning, Ltd.: *See*—
Davis, James H.; and Dams, Michael J., 4,800,124, Cl. 428-391.000.
Dowdle, Paul A. Slipform apparatus for emplacing horizontal arcuate re-inforcing rods. 4,799,872, Cl. 425-63.000.
Doyle, Marguerite H.: *See*—
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., 4,799,811, Cl. 400-279.000.
Drackett Company, The: *See*—
Sinclair, Richard G.; and Sowell, Sylvester, 4,800,066, Cl. 422-55.000.
Dragerwerk Aktiengesellschaft: *See*—
Heckmann, Johannes; and May, Wolfgang, 4,800,067, Cl. 422-86.000.
Dresser Industries, Inc.: *See*—
Pennison, Robert A.; and Biek, Paul A., 4,799,833, Cl. 408-132.000.
Drewel, Gunter; Enoch, Horst; and Grotkasten, Klaus, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Process and apparatus for loading a tire press. 4,800,059, Cl. 264-502.000.
Drukker International B.V.: *See*—
Peters, Josephus A. M., 4,800,002, Cl. 204-15.000.
Drusch, John A., III: *See*—
Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, 4,799,475, Cl. 128-25.00R.
Drye, James E.: *See*—
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,800,421, Cl. 357-80.000.
DuCorday, Gerard M. Hot melt glue binder. 4,800,110, Cl. 428-43.000.
Dudzik, Henryk, to Mardon Illingworth Limited. Container and plug closure means. 4,799,603, Cl. 220-307.000.
Duerden, David: *See*—
Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, 4,799,453, Cl. 118-665.000.
DuFault, Robert A., to Cardiac Pacemakers, Inc. Refractoriless atrial sensing in dual chamber pacemakers. 4,799,486, Cl. 128-419.0PG.
DuFault, Robert A., to Cardiac Pacemakers, Inc. Dual channel coherent fibrillation detection system. 4,799,493, Cl. 128-705.000.
Duggan, Peter J.: *See*—
Nelson, Anthony J.; and Duggan, Peter J., 4,800,145, Cl. 430-58.000.
Dunbar, Frank C.: *See*—
Kilbane, Farrell M.; Coleman, Richard A.; Dunbar, Frank C.; and Gibson, Alan F., 4,800,135, Cl. 428-653.000.
Dunbobbin, Brian R.: *See*—
Carlin, Richard T.; and Dunbobbin, Brian R., 4,800,070, Cl. 423-210.500.
Duncan, Robert, to Aardee Spring & Lock Co., Ltd. Keyless lock. 4,799,371, Cl. 70-214.000.
Dunkley, Michael W.; and Stainton, John E., to Eaton Corporation. Vehicle display for current and allowable gear ratios. 4,800,360, Cl. 340-52.00R.
Dunlop Construction Products Inc.: *See*—
Hrysko, Paul W., 4,799,845, Cl. 411-542.000.
Dunnion, Dermot: *See*—
Asghar, Safdar M.; Pyi, Hwa-Sheng; and Dunnion, Dermot, 4,800,517, Cl. 364-757.000.
Duplomatic S.p.A.: *See*—
De Bernardi, Franco, 4,799,410, Cl. 82-36.00A.
Du Pont de Nemours, E. I., and Company: *See*—
Deak, Gedeon I., 4,800,129, Cl. 428-474.400.
Hagan, Edward F., 4,799,993, Cl. 156-644.000.
Hochberg, Jerome, 4,799,954, Cl. 75-118.00P.
Jenkins, Colie L., 4,800,075, Cl. 423-588.000.
Lemke, Timothy A., 4,800,236, Cl. 174-36.000.
Murdoch, Joseph R.; and Loomis, Gary L., 4,800,219, Cl. 525-413.000.
Rellick, Joseph R., 4,799,984, Cl. 156-89.000.
Durette, Philippe L.: *See*—
Tischler, Allan N.; Durette, Philippe L.; Witzel, Bruce E.; and Lanza, Thomas J., Jr., 4,800,211, Cl. 514-443.000.
Duro-Last Roofing, Inc.: *See*—
Janni, Albert S., 4,799,986, Cl. 156-196.000.
Durossette, Leo J.: *See*—
Abbott, Woodrow A.; and Durossette, Leo J., 4,800,011, Cl. 204-302.000.
Durst, Robert T., Jr.; and Schmidt, Alfred C., to Pitney Bowes Inc. Interactive outgoing and incoming mailpiece processing system. 4,800,504, Cl. 364-478.000.
Durst, Robert T., Jr.: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; and Schmidt, Alfred C., 4,800,506, Cl. 364-478.000.
Dutt, William H., to Albany International Corp. Papermachine clothing. 4,799,998, Cl. 162-348.000.
Dutzmann, Stefan: *See*—
Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, 4,800,202, Cl. 514-227.000.
Duwell, Ernest J.: *See*—
Bloecher, Ulrich; and Duwell, Ernest J., 4,799,939, Cl. 51-293.000.
Dwan, Francis J.: *See*—
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., 4,800,462, Cl. 361-413.000.
Dynamit Nobel of America, Inc.: *See*—
Leonardi, Nicholas J., 4,800,126, Cl. 428-420.000.
Eagle Industry Co., Ltd.: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Tanzawa, Kenji, 4,799,867, Cl. 418-1.000.
Earle, John R. Electronic graphic arts proportional calculator. 4,800,514, Cl. 364-715.070.
Early, Roger W.: *See*—
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., 4,799,811, Cl. 400-279.000.
Earth Chemical Co., Ltd.: *See*—
Nomura, Yoshiharu; Aoki, Shigemasa; and Nishimura, Akira, 4,800,196, Cl. 514-159.000.

Eastman Kodak Company: *See*—
Estes, Marvin F., 4,799,766, Cl. 350-252.000.
Hellman, Robert R., Jr., 4,800,010, Cl. 204-299.00R.
Kellman, George A.; Flower, Richard E.; and Kidder, Harvey L., 4,799,688, Cl. 273-371.000.
Long, Michael E.; and Johnson, David A., 4,800,399, Cl. 346-76.0PH.
White, Alan W., 4,800,213, Cl. 514-616.000.
Eaton Corporation: *See*—
Dunkley, Michael W.; and Stainton, John E., 4,800,360, Cl. 340-52.00R.
Ellis, Herbert H., 4,800,356, Cl. 336-184.000.
Frederich, William L., 4,800,508, Cl. 364-484.000.
Johnson, Edgar A., 4,800,341, Cl. 331-2.000.
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., to Eli Lilly and Company. Process for producing the A-21978C antibiotics. 4,800,157, Cl. 435-71.000.
Eaves, Henry W.: *See*—
Dixon, George; and Eaves, Henry W., 4,799,944, Cl. 55-446.000.
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the microbiological preparation of aldose-1-epimerase. 4,800,161, Cl. 435-233.000.
Ebert, William R.: *See*—
Hom, Foo S.; and Ebert, William R., 4,800,083, Cl. 424-457.000.
ECC International Limited: *See*—
Jeffs, David G., 4,800,103, Cl. 427-221.000.
Echizen, Hiroshi; Ota, Masakatsu; and Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Illuminance distribution measuring system. 4,799,791, Cl. 356-121.000.
Eckenhoff, James B.; Theeuwes, Felix; and Deters, Joseph C., to ALZA Corporation. Process for making dispenser with cooperating elements. 4,800,056, Cl. 264-129.000.
Eckerle, Joseph S., to SRI International. Blood pressure monitoring method and apparatus. 4,799,491, Cl. 128-672.000.
Eckert, Gerold: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; and Maidhof, Rudiger, 4,800,466, Cl. 362-26.000.
Ecole Centrale des Arts et Manufactures de Paris: *See*—
Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, 4,799,788, Cl. 356-45.000.
Edano, Shigeki: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazalet; and Torguet, Roger, to Centre National De La Recherche Scientifique. Multi-frequency acousto-optic modulation process and apparatus. 4,799,777, Cl. 350-358.000.
Edward, Brian J.; Lang, Richard J.; and Rees, Daniel E., to General Electric Company. Microstrip fed printed dipole with an integral balun and 180 degree phase shift bit. 4,800,393, Cl. 343-821.000.
Edwards, Clarence K.; and Edwards, Lawrence D., to Kadee Metal Products Co. Model locomotive truck mounting mechanism. 4,799,431, Cl. 105-1.500.
Edwards, Lawrence D.: *See*—
Edwards, Clarence K.; and Edwards, Lawrence D., 4,799,431, Cl. 105-1.500.
Edwin Gaynor Co.: *See*—
Gaynor, Edwin; and Dinsdale, John C., 4,799,896, Cl. 439-232.000.
Efco Corporation: *See*—
Hudson, Timothy R., 4,799,330, Cl. 49-62.000.
Efferding, Larry E., to Westinghouse Electric Corp. Shock-absorbing and heat conductive basket for use in a fuel rod transportation cask. 4,800,283, Cl. 250-507.100.
Effland, Richard C.: *See*—
Hamer, R. Russell; Effland, Richard C.; and Klein, Joseph T., 4,800,203, Cl. 314-248.000.
Egawa, Tsuneo: *See*—
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.
Egidi, Corrado; and Mongiano, Riccardo, to Fiat Auto S.p.A. Control device for a motor vehicle gearbox. 4,799,397, Cl. 74-473.00R.
Eichenauer, Herbert; and Pischtschan, Alfred, to Bayer Aktiengesellschaft. ABS molding compositions of reduced residual butadiene content. 4,800,216, Cl. 525-285.000.
Eichhorn, Gunther: *See*—
Bruchez, Raymond J., Jr.; Eichhorn, Gunther; and Kiblinger, Elliott C., II, 4,799,623, Cl. 239-265.410.
Eickmann, Karl. Fluid flow facilitating arrangement which includes a coned ring. 4,799,654, Cl. 267-162.000.
EIP Microwave, Inc.: *See*—
Roos, Mark D.; and Messmer, Walter J., III, 4,800,464, Cl. 361-424.000.
EKA Nobel AB: *See*—
Bengtsson, Erik; and Andersson, Ulf, 4,800,073, Cl. 423-588.000.
Bengtsson, Erik; and Andersson, Ulf, 4,800,074, Cl. 423-588.000.
Electricite de France: *See*—
Baize, Dominique; Cleand, Maurice; and Minard, Serge, 4,800,484, Cl. 364-200.000.
Electricite de France Service National: *See*—
Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, 4,799,788, Cl. 356-45.000.
Elfline, Geraldine S., to Iso-Clear Systems Corporation. Removal of heavy metals and heavy metal radioactive isotopes from liquids. 4,800,024, Cl. 210-665.000.
Eli Lilly and Company: *See*—
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.
Elkem Metals Company: *See*—
McClellan, Melvin L., 4,799,955, Cl. 75-247.000.
Ellis, Herbert H., to Eaton Corporation. Shunt transformer. 4,800,356, Cl. 336-184.000.
Elman, Larisa A., to General Electric Company. Automatic cutting bit recovery. 4,799,408, Cl. 82-1.00C.
ELPATRONIC AG: *See*—
Gysi, Peter, 4,799,585, Cl. 198-743.000.
Elvin, Frank J.; Otterstedt, Jan-Erik; and Yoo, Jin S., to ChemCat Corporation. Regeneraation of metal contaminated hydrocarbon conversion catalytsts. 4,800,185, Cl. 502-26.000.
Elze, Karl H. Patient moving means for hospital bed. 4,799,273, Cl. 5-81.00R.
Emerick, Alan J.: *See*—
Simpson, John P.; Newman, Gary L.; Larnerd, James M.; and Emerick, Alan J., 4,799,616, Cl. 228-125.000.
Emhart Enterprises Corp.: *See*—
Kreider, Hans; and Mueller, Manfred, 4,799,842, Cl. 411-171.000.
Enami, Kazumasa: *See*—
Murakami, Keinosuke; Enami, Kazumasa; and Yagi, Nobuyuki, 4,800,430, Cl. 358-160.000.
Endo, Takayoshi, to Yazaki Corporation. Connective structure for conductive wires and a method of manufacturing the same. 4,799,899, Cl. 439-502.000.
Enge, Per, to Megapulse, Inc. Method of and apparatus for message communication on Loran-C navigational signal broadcasts and the like with reduced navigation errors. 4,800,391, Cl. 342-389.000.
Engetra S.A.: *See*—
Monjoie, Michel W. J. P. R., 4,800,047, Cl. 261-112.200.
Engle, Thomas H., to General Signal Corporation. Parking brake system for railway vehicles. 4,799,741, Cl. 303-60.000.
Enk, Allan T.; and Gerber, Charles H., to Libbey-Owens-Ford Co. Adjustable bearing rail apparatus for bending glass sheets. 4,799,948, Cl. 65-286.000.
Enoch, Horst: *See*—
Drewel, Gunter; Enoch, Horst; and Grotkasten, Klaus, 4,800,059, Cl. 264-502.000.
Ensing, Hendrik: *See*—
Cox, Jan. J. F. M.; and Ensing, Hendrik, 4,800,337, Cl. 324-455.000.
Eppley, William J.; and Hawkins, Warren E., to Honeywell Inc. Reserve activated electrochemical cell. 4,800,141, Cl. 429-116.000.
Erb, Karl J., to Mettler Instruments AG. Method of and an apparatus for an optical measuring of a position. 4,799,798, Cl. 356-374.000.
Erfurt, George A.: *See*—
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,800,099, Cl. 426-641.000.
Erhard Thoma: *See*—
Laeuppi, Heinrich; and Fedrizzi, Bruno, 4,799,820, Cl. 404-100.000.
Erhardt, Manfred; and Loos, Herbert, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Gearlike dressing tool. 4,799,473, Cl. 125-11.0CD.
Erickson, Anita S.: *See*—
Karbowski, Robert J.; Erickson, Anita S.; Gartner, Charles D.; and Roy, Kathleen A., 4,800,082, Cl. 424-409.000.
Eriks Holding N.V.: *See*—
Klevnjans, Joseph P. H., 4,799,342, Cl. 52-173.0DS.
Erlich, Henry A.: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.
Ernst Schmutz GmbH.: *See*—
Mierswa, Christian; and Schmutz, Friedrich, 4,800,063, Cl. 376-316.000.
Ernst Winter & Sohn (GmbH & Co.): *See*—
Tonshoff, Hans K.; Grabher, Thomas; Gosebruch, Harald; and Jendryschik, Jurgen, 4,799,472, Cl. 125-11.00R.
Eschwey, Manfred; and Schleser, Werner, to Messer Griesheim GmbH. Mass for removal, through chemical sorption, of homogeneously dissolved impurities, particularly oxygen, from gases or liquids. 4,800,189, Cl. 502-400.000.
Espejo, Celso: *See*—
Simelunas, William J.; Shoiket, Henry N.; and Espejo, Celso, 4,799,583, Cl. 198-418.100.
Esposito, Anthony. Digitally controlled switch-mode power supply apparatus employing quantized stored digital control signals. 4,800,477, Cl. 363-17.000.
Estes, Marvin F., to Eastman Kodak Company. Objective lens support and positioning system. 4,799,766, Cl. 350-252.000.
Ethicon, Inc.: *See*—
Smith, Daniel J.; and Furman, Dennis L., 4,799,484, Cl. 128-339.000.
Transue, James A.; Pynn, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., 4,799,481, Cl. 128-325.000.
Ethyl Corporation: *See*—
Roper, Jerry M., 4,800,230, Cl. 558-388.000.
ETI Systems: *See*—
Tice, Bill, 4,800,308, Cl. 310-83.000.
Evans, David W.: *See*—
Ginsburg, Arthur P.; Evans, David W.; and Blauvelt, Kenneth, 4,800,404, Cl. 351-243.000.

Evans, John M.; and Stemp, Geoffrey, to Beecham Group p.l.c. Pyrrolidone-2 compounds and anti-hypertensive use thereof. 4,800,212, Cl. 514-424.000.
Ever Ready Limited: *See*—
Burton, Colin R.; and Davies, Philip, 4,800,472, Cl. 362-158.000.
Everest & Jenninga Canadian Limited: *See*—
Burrows, Donald L.; and Milne, Edward J., 4,799,562, Cl. 177-229.000.
Explosives Technologies International Inc.: *See*—
Yunan, Malak E., 4,799,428, Cl. 102-322.000.
Ezzat, Ahmed K.: *See*—
Agrawal, Rakesh; and Ezzat, Ahmed K., 4,800,488, Cl. 364-200.000.
Factor, Bradford J.: *See*—
Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., 4,800,397, Cl. 346-1.100.
Faeser, Ulrich; and Mahn, Dieter, to Fresenius AG. Spray pump with a motor driven drive rod. 4,799,866, Cl. 417-415.000.
Fahringer, Thomas L. Device for coupling hooks to pegboard. 4,799,637, Cl. 248-221.200.
Failon, Brian K.: *See*—
Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., 4,800,071, Cl. 423-321.00R.
Fails, Charles F., deceased: *See*—
BeVier, William E.; Fails, Charles F., deceased; and Fails, Virginia N., executor, 4,800,027, Cl. 252-18.000.
Fails, Virginia N., executor: *See*—
BeVier, William E.; Fails, Charles F., deceased; and Fails, Virginia N., executor, 4,800,027, Cl. 252-18.000.
Fansteel Inc.: *See*—
Rausch, John J., 4,799,977, Cl. 148-317.000.
Fanuc Ltd: *See*—
Fujioka, Yoshiki; and Kouno, Shinichi, 4,800,327, Cl. 318-798.000.
Karube, Norio, 4,800,567, Cl. 372-87.000.
Farkas, Eva: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Farmer, David M.; and Verrall, Jane A., to Canadian Patents and Development Limited. Method for underwater acoustic direction sensing. 4,800,541, Cl. 367-424.000.
Farquhar, George N., to Aktiebolaget Electrolux. Throttle control device. 4,799,468, Cl. 123-400.000.
Fasco Industries, Inc.: *See*—
Lakin, Bryan L., 4,800,309, Cl. 310-90.000.
Fata European Group S.p.A.: *See*—
Di Rosa, Gaetano, 4,800,249, Cl. 219-79.000.
Fateley, William G., to D.O.M. Associates, Inc. Stationary, electrically alterable, optical masking device and spectroscopic apparatus employing same. 4,799,795, Cl. 356-310.000.
Faust, Steven M.: *See*—
Glass, Michael; Hoholick, Joseph; Dombroski, Amy; and Faust, Steven M., 4,800,091, Cl. 426-3.000.
Favret, Ugo: *See*—
Milocco, Claudio; Favret, Ugo; and Martegani, Antonio, 4,799,855, Cl. 415-143.000.
Federal Paper Board Co., Inc.: *See*—
Blackman, Stephen M., 4,799,594, Cl. 206-626.000.
Federico, Anthony M.: *See*—
Carter, Jeff C.; Federico, Anthony M.; and Comparetta, Christopher, 4,800,521, Cl. 364-900.000.
Fedorov, Svyatoslav N.; Krutov, Sergei V.; Soloviev, Sergei A.; Alexandrova, Olga G.; and Korshunova, Nadezhda K. Device for coagulation of biological tissues. 4,799,478, Cl. 128-303.100.
Fedrizzi, Bruno: *See*—
Laeuppi, Heinrich; and Fedrizzi, Bruno, 4,799,820, Cl. 404-100.000.
Fehrenbach, Waltraud: *See*—
Baur, Guter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 4,799,774, Cl. 350-346.000.
Fehrer, Ernst. Apparatus for making slivers from a lap. 4,799,294, Cl. 19-99.000.
Feinbloom, Richard E., to Designs for Vision, Inc. Method and apparatus of placing a lens in a telescopic lens assembly while providing optical alignment. 4,799,793, Cl. 356-127.000.
Femlib Medical Devices (Proprietary) Limited: *See*—
Crowley, Ivan P., 4,799,928, Cl. 604-329.000.
Ferchau, Joerg U.; and Kotyuk, Kenneth A., to Tandem Computers Incorporated. Circuit board barrier guide. 4,800,463, Cl. 361-424.000.
Ferlan, Stephen J.: *See*—
Shallenberger, John M.; and Ferlan, Stephen J., 4,799,312, Cl. 29-723.000.
Shallenberger, John M.; and Ferlan, Stephen J., 4,800,061, Cl. 376-261.000.
Ferren, Richard A.: *See*—
Bloomfield, Philip E.; Ferren, Richard A.; and Wickwire, Dean H., 4,800,048, Cl. 264-22.000.
Ferrer, John J., to Hughes Aircraft Company. Integrated head-up and panel display unit. 4,799,765, Cl. 350-174.000.
Fertig, Glenn H.: *See*—
Bossart, Clayton J.; Fertig, Glenn H.; and Welker, Albert L., 4,799,374, Cl. 73-1.00G.
Fetterhoff, Donald C.: *See*—
Humphries, David R.; Fetterhoff, Donald C.; and Higgins, William R., 4,799,631, Cl. 244-118.500.
FGL Projects Limited: *See*—
Gannon, Raymond, 4,799,863, Cl. 417-84.000.
Fiat Auto S.p.A.: *See*—
Egidi, Corrado; and Mongiano, Riccardo, 4,799,397, Cl. 74-473.00R.
Figg and Muller Engineers, Inc.: *See*—
Muller, Jean M., 4,799,279, Cl. 14-1.000.
Fink, Roland; and Klingenstein, Walter, to Oskar Frech GmbH & Co. Spray head having fluid metering screws. 4,799,624, Cl. 239-412.000.
Firmenich S.A.: *See*—
Simmons, Dana P., 4,800,233, Cl. 568-447.000.
Fischer, Ernest J., to Breuer Electric Mfg. Co. Pad holder release mechanism for floor treating machines. 4,799,282, Cl. 15-98.000.
Fitzpatrick, Mark E.: *See*—
Graham, Andrew C.; and Fitzpatrick, Mark E., 4,800,303, Cl. 307-450.000.
Flakt AB: *See*—
Hansson, Torbjorn, 4,799,318, Cl. 34-117.000.
Flanagan, William D.: *See*—
Barber, Thomas D.; Vandermeer, William B.; and Flanagan, William D., 4,800,496, Cl. 364-422.000.
Flanigen, Edith M.: *See*—
Wilson, Stephen T.; Woodard, Naomi A.; and Flanigen, Edith M., 4,799,942, Cl. 55-35.000.
Flo-Con Systems, Inc.: *See*—
King, Patrick D., 4,799,649, Cl. 266-45.000.
Florea, Michael; Foster, Stephen C.; and Bisaga, Gary J., to Contel Information Systems, Inc. Ethernet and broadband lan interface. 4,800,559, Cl. 370-94.000.
Flory, Donald M.: *See*—
Goubeaux, Carl E.; and Flory, Donald M., 4,799,715, Cl. 285-215.000.
Flower, Richard E.: *See*—
Kellman, George A.; Flower, Richard E.; and Kidder, Harvey L., 4,799,688, Cl. 273-371.000.
Fly Fishing Technology Limited: *See*—
Burgess, Paul D., 4,799,417, Cl. 87-11.000.
FMC Corporation: *See*—
Buckley, Margaret M., 4,799,848, Cl. 414-347.000.
Follansbee Steel Corporation: *See*—
Meriwether, Jon D., 4,799,445, Cl. 114-267.000.
Forbes, Curtis E.; Forbes, Micheal M.; and Forbes, William L. Wood splitter. 4,799,519, Cl. 144-366.000.
Forbes, Micheal M.: *See*—
Forbes, Curtis E.; Forbes, Micheal M.; and Forbes, William L., 4,799,519, Cl. 144-366.000.
Forbes, William L.: *See*—
Forbes, Curtis E.; Forbes, Micheal M.; and Forbes, William L., 4,799,519, Cl. 144-366.000.
Ford, Lynda M.: *See*—
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.
Ford Motor Company: *See*—
Bruce, Robert W., 4,799,399, Cl. 74-477.000.
Cinzori, Carl; Williams, Carl, Jr.; Mitchell, Clair E.; and Striker, David L., 4,799,309, Cl. 29-596.000.
Ford New Holland, Inc.: *See*—
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., 4,799,625, Cl. 241-30.000.
Forisek, Istvan: *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.
Foschini, Gerard J., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Technique for repelling carriers in optical communications to minimize mutual interference. 4,800,555, Cl. 370-3.000.
Foster, Bruce A.; and Hedges, Raymond, to Steel Engineering Co., Ltd., The. Drilling boom. 4,799,556, Cl. 173-43.000.
Foster, Kenneth L.: *See*—
Rose, Gene D.; Teot, Arthur S.; and Foster, Kenneth L., 4,800,036, Cl. 252-102.000.
Foster, Stephen C.: *See*—
Florea, Michael; Foster, Stephen C.; and Bisaga, Gary J., 4,800,559, Cl. 370-94.000.
Fourez, Michel; Lonca, Michel; and Pichant, Patrick. Anticorrosion coating composition, process for applying it and coated threaded components. 4,799,959, Cl. 106-1.160.
Fourrey, Francois: *See*—
Beley, Serce; and Fourrey, Francois, 4,799,733, Cl. 297-379.000.
Foxall, David L., to Varian Associates, Inc. Method and apparatus for execution of multislice imaging experiments. 4,800,494, Cl. 364-413.130.
Framatome: *See*—
Dagard, Philippe; and Couturier, Michel, 4,799,538, Cl. 165-47.000.
Francis, Geoffrey V., to Vision Engineering & Design, Inc. Mechanical-adhesion glazing. 4,799,344, Cl. 52-235.000.
Francois, Robert M. Safety harness. 4,799,709, Cl. 280-801.000.
Franke, Wolfgang: *See*—
Hickel, Sigrun; and Franke, Wolfgang, 4,799,626, Cl. 241-37.500.
Franklin, J. Barrie; and McMahon, Garfield W., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Tilt sensor for

resolving left-right ambiguity in underwater acoustic detection systems. 4,800,542, Cl. 367-154.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,799,430, Cl. 104-2.000.
Fray, Derek J., to National Research Development Corporation. Zinc recovery from furnace dust. 4,800,069, Cl. 423-97.000.
Freal, James B.; Zarobila, Clarence J.; and Davis, Charles M. Optical fiber microbend horizontal accelerometer. 4,800,267, Cl. 250-227.000.
Frechet, Jean M. J.: *See*—
Allen, Robert D.; Frechet, Jean M. J.; Twieg, Robert J.; and Willson, Carlton G., 4,800,152, Cl. 430-270.000.
Freda, Gerald; Bogacz, Joseph; Freda, Joseph; and Olson, Dennis, to C & F Packing, Inc. Method for processing a cooked food product. 4,800,094, Cl. 426-513.000.
Freda, Joseph: *See*—
Freda, Gerald; Bogacz, Joseph; Freda, Joseph; and Olson, Dennis, 4,800,094, Cl. 426-513.000.
Frederich, William L., to Eaton Corporation. Frequency detector. 4,800,508, Cl. 364-484.000.
Frederiksen, Jeffrey E., to Bally Manufacturing Corporation. Video game having video disk read only memory. 4,799,677, Cl. 273-1.00E.
Free Flow Packaging Corporation: *See*—
Fuss, Gunter G., 4,799,830, Cl. 406-117.000.
Freeman Chemical Corporation: *See*—
Boeckeler, Rudolph H., 4,800,123, Cl. 428-424.200.
Fremont, Andrew de M., to GEC Avionics Limited. Infra-red imager. 4,800,277, Cl. 250-334.000.
Fresenius AG: *See*—
Faeser, Ulrich; and Mahn, Dieter, 4,799,866, Cl. 417-415.000.
Friberg, Walter R. Cementuous fiber impregnated construction composition and process for formation thereof. 4,799,961, Cl. 106-93.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Drewel, Gunter; Enoch, Horst; and Grotkasten, Klaus, 4,800,059, Cl. 264-502.000.
Friedman, Gennady, to Advanced Techniques Co., Inc. Convection heat attachment and removal instrument for surface mounted assemblies. 4,799,617, Cl. 228-180.200.
Friedrich Wilh Schwing GmbH: *See*—
Simnovec, Andrej; Meinken, Bernhard; and Schwing, Friedrich, 4,799,573, Cl. 182-2.000.
Friese, Hans-Herbert; Ploog, Uwe; and Prinz, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Oiling agents based on sulfosuccinic acid monoamides. 4,799,932, Cl. 8-94.230.
Friese, Hans-Herbert; Pieper, Friedrich; and Bosse, Reinhard, to Henkel Kommanditgesellschaft auf Aktien. Sulfited fats. 4,800,045, Cl. 260-400.000.
Frigo, Domenico: *See*—
Cordiano, Ettore; Garnero, Pierino; and Frigo, Domenico, 4,799,869, Cl. 418-97.000.
Frommelt Industries, Inc.: *See*—
Frommelt, John A.; and Lenz, Kenneth, 4,799,341, Cl. 52-173.0DS.
Frommelt, John A.; and Lenz, Kenneth, to Frommelt Industries, Inc. Wedge seal for loading dock shelter. 4,799,341, Cl. 52-173.0DS.
Fuchizawa, Tetsuro: *See*—
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,800,192, Cl. 503-200.000.
Fuji Photo Film Co., Ltd.: *See*—
Arakawa, Satoshi; Miyahara, Junji; and Takahashi, Kenji, 4,800,136, Cl. 428-690.000.
Harada, Toru; and Sato, Kozo, 4,800,148, Cl. 430-138.000.
Kaneko, Kiyotaka; Oda, Kazuya; Takahashi, Kimihide; and Miyake, Izumi, 4,800,448, Cl. 360-35.100.
Katoh, Kazunobu, 4,800,150, Cl. 430-264.000.
Morimoto, Kiyoshi; and Ishikawa, Takatoshi, 4,800,153, Cl. 430-380.000.
Noguchi, Masaru, 4,800,276, Cl. 250-327.200.
Okazaki, Masaki; and Takei, Haruo, 4,800,154, Cl. 430-570.000.
Okita, Tsutomu, 4,800,458, Cl. 360-135.000.
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.
Shimizu, Masayuki; and Yoshikawa, Sumio, 4,800,275, Cl. 250-317.100.
Tajima, Kenji; and Arai, Noboru, 4,799,591, Cl. 206-455.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,800,192, Cl. 503-200.000.
Tanaka, Nobuyuki, 4,800,511, Cl. 364-521.000.
Yamada, Minoru, 4,800,408, Cl. 354-322.000.
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, 4,800,146, Cl. 430-73.000.
Fuji Rubber Co. Limited: *See*—
Osawa, Yasuhisa; and Kimura, Yasuko, 4,800,243, Cl. 200-514.000.
Fujieda, Yasuhiko; Amano, Itaru; and Kanzawa, Masahide, to Kabushiki Kaisha Kobe Seiko Sho. Unloader mechanism for use with a vulcanizing machine. 4,799,871, Cl. 425-38.000.
Fujii, Hiroshi, to Mazda Motor Corporation. Apparatus for loading spare wheels on vehicle bodies. 4,799,581, Cl. 198-341.000.
Fujii, Kazuo, to Kawasaki Steel Corp. Conductor roll profile adjustment. 4,800,004, Cl. 204-28.000.
Fujii, Satoshi: *See*—
Koiso, Takashi; and Fujii, Satoshi, 4,799,970, Cl. 148-6.200.
Fujioka, Yoshiki; and Kouno, Shinichi, to Fanuc Ltd. Three-phase induction motor control method. 4,800,327, Cl. 318-798.000.
Fujitsu Limited: *See*—
Arakawa, Hideki, 4,800,533, Cl. 365-228.000.
Koshizuka, Atuo; and Furumochi, Kazuto, 4,800,552, Cl. 365-190.000.
Mukai, Ryoichi, 4,800,179, Cl. 437-203.000.
Takeuchi, Atsushi, 4,800,304, Cl. 307-602.000.
Tanaka, Tsutomu; and Oinaga, Yuji, 4,800,490, Cl. 364-200.000.
Ueno, Kouji, 4,800,529, Cl. 365-189.000.
Fukai, Yoshio; Takagi, Hitoshi; and Osawa, Tatsuo. Vibratory body mounting structure with a vibration-conduction preventing mechanism. 4,799,640, Cl. 248-559.000.
Fukuhara, Yoshio: *See*—
Kujirai, Masaji; and Fukuhara, Yoshio, 4,800,581, Cl. 378-143.000.
Fukuta, Toshiaki: *See*—
Honda, Minoru; Fukuta, Toshiaki; Yamaguchi, Akihide; and Ikuta, Kenzi, 4,799,470, Cl. 123-470.000.
Fukuyama, Hirohisa: *See*—
Kikuchi, Nobuaki; Fukuyama, Hirohisa; Hirabayashi, Tamio; and Imai, Kouichi, 4,799,743, Cl. 312-228.000.
Furey, Andrew J.; and Rosenwald, Frederic P., to Pilling Co. Neonatal subglottiscope set. 4,799,485, Cl. 128-11.000.
Furman, Dennis L.: *See*—
Smith, Daniel J.; and Furman, Dennis L., 4,799,484, Cl. 128-339.000.
Furman, Theodore J. Package and method of packaging. 4,799,590, Cl. 206-390.000.
Furumochi, Kazuto: *See*—
Koshizuka, Atuo; and Furumochi, Kazuto, 4,800,552, Cl. 365-190.000.
Furushima, Masakazu: *See*—
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.
Furuya, Tsuneo: *See*—
Hori, Katsuya; and Furuya, Tsuneo, 4,800,515, Cl. 364-746.100.
Fuss, Gunter G., to Free Flow Packaging Corporation. Air conveyor dispensing and recycling system. 4,799,830, Cl. 406-117.000.
Futamura, Shoji; and Kurihara, Masaki, to Institute of Technology Precision Electrical Discharge Works. Electrical discharge machining apparatus with discharge current control. 4,800,248, Cl. 219-69.00S.
G.B.R. Ltd.: *See*—
Golicz, Roman M., 4,799,663, Cl. 271-199.000.
G & H Technology, Inc.: *See*—
Balyasny, Marik, 4,799,759, Cl. 350-96.210.
G.T.I. du Gaianigo Umberto & Co. Snc: *See*—
Gaianigo, Umberto, 4,799,644, Cl. 251-14.000.
Gabriele, Valentino, to J. C. Pardo and Sons. Sanitary shaft seal assembly. 4,799,690, Cl. 277-9.000.
Gaddi, Bruno. Frame moped. 4,799,567, Cl. 180-205.000.
GAF Corporation: *See*—
Lewis, David F., 4,800,526, Cl. 365-118.000.
O'Lenick, A. J., Jr.; and Smith, Wayne C., 4,800,077, Cl. 424-70.000.
Gahan, Edward A., to Donnelly Corporation. Automatic rearview mirror with filtered light sensors. 4,799,768, Cl. 350-279.000.
Gaianigo, Umberto, to G.T.I. du Gaianigo Umberto & Co. Snc. Actuator activating on-off valves. 4,799,644, Cl. 251-14.000.
Galland, Sherry A., to J. R. Simplot. Method of preserving potatoes. 4,800,098, Cl. 426-637.000.
Gannon, Raymond, to FGL Projects Limited. Vacuum flow device. 4,799,863, Cl. 417-84.000.
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., to Motorola, Inc. Integral laminar antenna and radio housing. 4,800,392, Cl. 343-700.0MS.
Garay, Oscar M.: *See*—
Balzano, Quirino; and Garay, Oscar M., 4,800,395, Cl. 343-895.000.
Gardner, Steven J., to ASM America, Inc. Electrode boat apparatus for processing semiconductor wafers or the like. 4,799,451, Cl. 118-500.000.
Garnero, Pierino: *See*—
Cordiano, Ettore; Garnero, Pierino; and Frigo, Domenico, 4,799,869, Cl. 418-97.000.
GARRIG 4 S.s.: *See*—
Cordiano, Ettore; Garnero, Pierino; and Frigo, Domenico, 4,799,869, Cl. 418-97.000.
Gartner, Charles D.: *See*—
Karbowski, Robert J.; Erickson, Anita S.; Gartner, Charles D.; and Roy, Kathleen A., 4,800,082, Cl. 424-409.000.
Gatto, Claudio U.: *See*—
Villoch, Joe D.; Gatto, Claudio U.; and Oprisi, Mike V., 4,799,527, Cl. 160-168.100.
Gaynor, Edwin; and Dinsdale, John C., to Edwin Gaynor Co. Socket for compact fluorescent lamps. 4,799,896, Cl. 439-232.000.
Gazelle Microcircuits, Inc.: *See*—
Graham, Andrew C.; and Fitzpatrick, Mark E., 4,800,303, Cl. 307-450.000.
GEC Avionics Limited: *See*—
Fremont, Andrew de M., 4,800,277, Cl. 250-334.000.
Geddes, Ronald C., to U.S. Philips Corporation. Non-volatile memory having charge correction circuitry. 4,800,528, Cl. 365-185.000.
Geenen, Bernard: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.
Gehring, Reinhold: *See*—
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Double hookes joint. 4,799,817, Cl. 403-57.000.

Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Canine biscuit containing discrete particles of meat and other materials and method for making same. 4,800,099, Cl. 426-641.000.

General Electric Company: *See—*
Azad, Farzin H., 4,800,569, Cl. 372-99.000.
Edward, Brian J.; Lang, Richard J.; and Rees, Daniel E., 4,800,393, Cl. 343-821.000.
Elman, Larisa A., 4,799,408, Cl. 82-1.00C.
Hardy, Robert M., 4,800,491, Cl. 364-200.000.
Hathaway, Susan J.; and Pyles, Robert A., 4,800,218, Cl. 525-433.000.
Jebens, Robert W., 4,799,778, Cl. 350-452.000.
Jones, Marshall G., 4,799,755, Cl. 350-96.180.
Lahti, Daniel J.; and Younghans, James L., 4,799,633, Cl. 244-130.000.
Laskaris, Evangelos T., 4,800,354, Cl. 335-216.000.
Milkovic, Miran, 4,800,333, Cl. 324-142.000.
Reed, Bradley O., 4,799,401, Cl. 74-677.000.
Saad, William T.; and Medford, George F., 4,800,127, Cl. 428-447.000.
Siedlecki, Walter F., Jr.; and Horst, Kenneth R., 4,799,376, Cl. 73-29.000.

General Foods Corporation: *See—*
DiGiovacchino, David J.; Carlson, Richard A.; Jonas, Rodger H.; and Marion, Sheila, 4,800,096, Cl. 426-577.000.

General Motors Corporation: *See—*
Bish, James R.; McCartney, Charles P., Jr.; and Meadows, Clarence A., 4,800,142, Cl. 429-130.000.
Goubeaux, Carl E.; and Flory, Donald M., 4,799,715, Cl. 285-215.000.
Jain, Kailash C.; and MacIver, Bernard A., 4,800,170, Cl. 437-24.000.
Patel, Ramaalal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.

General Signal Corporation: *See—*
Engle, Thomas H., 4,799,741, Cl. 303-60.000.
Warner, Robin L.; and DeSisto, Richard E., 4,800,313, Cl. 310-242.000.

Gentelia, John S.: *See—*
Abraham, William W.; and Gentelia, John S., 4,799,480, Cl. 128-303.130.

Gentex Corporation: *See—*
Sallavanti, Robert A.; Dalton, Jeffrey L.; and Olsen, Sharon M., 4,800,122, Cl. 428-412.000.

George A. Mitchell Company: *See—*
Alexoff, Randall L., 4,799,412, Cl. 83-54.000.

George Angus & Company Limited: *See—*
Johnston, David E., 4,799,693, Cl. 277-96.100.

George, William A.: *See—*
Grossman, Mark W.; and George, William A., 4,800,284, Cl. 250-505.100.

Georgii, Hans, to Hydro Betong AB. Off-shore-complex. 4,799,828, Cl. 405-195.000.

Gerber, Charles H.: *See—*
Enk, Allan T.; and Gerber, Charles H., 4,799,948, Cl. 65-286.000.

Gerdes, Erwin, to MBB GmbH. Support for stock in a cutter. 4,799,415, Cl. 83-177.000.

Geremia, Nonini, to Danieli & C. Officine Meccaniche SpA. System and method for moving skips and pressing scrap in a skip. 4,799,426, Cl. 100-218.000.

Gerety, Eugene P.; and Vij, Jitender K., to ITT Corporation. Device interface controller having device specific and device common instructions separately stored. 4,800,523, Cl. 364-900.000.

Gerrard, Donald L., to British Petroleum Company p.l.c., The. Method of diamond identification. 4,799,786, Cl. 356-30.000.

Gertzman, Arthur A.: *See—*
Transue, James A.; Pynn, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., 4,799,481, Cl. 128-325.000.

Gesvent, George, to Honeywell Inc. Housing with improved adjustment access sealing arrangement. 4,800,238, Cl. 174-52.100.

Ghelardoni, Mario: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

Ghosh, Amit K.: *See—*
Mahoney, Murray W.; and Ghosh, Amit K., 4,799,974, Cl. 148-12.70A.

Giannotti, Danilo: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

Gibson, Alan F.: *See—*
Kilbane, Farrell M.; Coleman, Richard A.; Dunbar, Frank C., and Gibson, Alan F., 4,800,135, Cl. 428-653.000.

Gierhart, Dennis O.: *See—*
Hogan, William C.; and Gierhart, Dennis O., 4,800,093, Cl. 426-46.000.

Giglia, Salvatore: *See—*
Bikson, Benjamin; and Giglia, Salvatore, 4,800,019, Cl. 210-321.800.

Gilbarco, Inc.: *See—*
Millikan, Joseph B., 4,799,940, Cl. 55-52.000.

Gilbert Manufacturing Co.: *See—*
Schick, Henry, 4,799,898, Cl. 439-418.000.

Gilbert, Robert B., to Allied-Signal Inc. Very high speed marginally lubricated ball thrust bearing. 4,799,810, Cl. 384-606.000.

Gillett, Jimmie D., to Ranco Incorporated. Temperature sensing circuit. 4,800,292, Cl. 307-117.000.

Ginier, Ami: *See—*
Kotthaus, Erich; Ginier, Ami; and Hildinger, Otto, 4,799,337, Cl. 51-287.000.

Ginsburg, Arthur P.; Evans, David W.; and Blauvelt, Kenneth, to Vistech Consultants, Inc. Apparatus and method for testing visual sensitivity to glare. 4,800,404, Cl. 351-243.000.

Giolitti, Alessandro: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, to Degussa AG. Intermediates for the production of 1,2-dithiolan acid (thioctic acid), 4,800,044, Cl. 260-399.000.

Giusti, Giambattista; Reinauer, Thomas V.; and DeHont, Raymond J. Gas stream diffusing and distribution apparatus. 4,799,943, Cl. 55-308.000.

Glaenzer Spicer: *See—*
Van Dest, Jean Claude, 4,799,402, Cl. 74-701.000.

Glass, Michael; Hoholick, Joseph; Dombroski, Amy; and Faust, Steven M., to Warner-Lambert Company. Chewing gum compositions having sequential acid release. 4,800,091, Cl. 426-3.000.

Glenn, William E., to New York Institute of Technology. Method and system for transmission and reception of high definition. 4,800,426, Cl. 358-141.000.

Glidden Company, The: *See—*
Wickert, Frank A., 4,800,107, Cl. 427-421.000.

Gnadinger, Alfred P.: *See—*
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., 4,800,543, Cl. 368-10.000.

Goddard, Peggy L.: *See—*
Scott, Douglas R.; Goddard, Peggy L.; and Wagner, Joseph P., 4,799,301, Cl. 29-25.350.

Godfrey, Otis W., Jr.: *See—*
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.

Goetter, Erwin H., to Preformed Line Products Company. Encapsulated fiber optic closure. 4,799,757, Cl. 350-96.200.

Goetze AG: *See—*
Brauers, Bert, 4,799,694, Cl. 277-140.000.

Gold, Peter N. Window assembly. 4,799,343, Cl. 52-208.000.

Goldenberg, Tsvi, to Advanced Interventional Systems, Inc. Delivery system for high-energy pulsed ultraviolet laser light. 4,799,754, Cl. 350-96.180.

Goldman, Craig E.: *See—*
Riseman, John H., deceased; Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., 4,800,442, Cl. 358-280.000.

Goldman, Jeffrey R. Fishing bobber with scent emission. 4,799,328, Cl. 43-42.060.

Goldring, Gvirol, to Yeda Research & Development Co., Ltd. Window assembly for positron emitter. 4,800,060, Cl. 376-202.000.

Goldstar Co., Ltd.: *See—*
Lee, Eon H.; and Chin, Seok W., 4,800,246, Cl. 219-10.55F.

Golias, Tipton A.: *See—*
Mayes, Ronald A.; and Golias, Tipton A., 4,799,597, Cl. 215-250.000.

Golicz, Roman M., to G.B.R. Ltd. Feeding mechanism. 4,799,663, Cl. 271-199.000.

Goller, Ernest; and Walker, Fritz, to H. Stoll GmbH & Co. Device for flatbed knitting machines for monitoring the knitwear for falling-off. 4,799,365, Cl. 66-166.000.

Golub, Jeff E. Dental process with treated fabric. 4,799,888, Cl. 433-215.000.

Gomi, Toyoji; and Yamada, Kozo. Anti-shoplifting system. 4,800,369, Cl. 340-572.000.

Good, Hans P.: *See—*
Krueger, Hans; and Good, Hans P., 4,800,568, Cl. 372-99.000.

Goodale, Clarke W., to American-National Watermattress Corporation. Hybrid watermattress having concave softsides. 4,799,277, Cl. 5-451.000.

Goodman, Steve F., to Herman Miller, Inc. Tamperproof cabinet. 4,799,436, Cl. 109-50.000.

Goodson, Thomas A.; and Truelove, Ronald D. Lock protector. 4,799,369, Cl. 70-54.000.

Gordon, Richard A. Grooming comb for pets. 4,799,457, Cl. 119-92.000.

Gorisch, Armin: *See—*
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.

Gosebruch, Harald: *See—*
Tonshoff, Hans K.; Grabher, Thomas; Gosebruch, Harald; and Jendryschik, Jurgen, 4,799,472, Cl. 125-11.00R.

Goshorn, Jean; Loucks, L. David; and Loucks, Terry K. Animal restraint collar. 4,799,458, Cl. 119-96.000.

Gotaas, Birger: *See—*
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, 4,800,481, Cl. 363-70.000.

Goto, Shigeki: *See—*
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, 4,799,404, Cl. 74-869.000.

Gotou, Masakazu: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.

Gottschalk, Peter; and Schuster, Gary B., to Mead Corporation, The. Photohardenable compositions containing a dye borate complex and photosensitive materials employing the same. 4,800,149, Cl. 430-138.000.

Gottschamel, Georg: *See*—
Janz, Peter; and Gottschamel, Georg, 4,799,938, Cl. 51-293.000.

Goubeaux, Carl E.; and Flory, Donald M., to General Motors Corporation. High pressure tube attachment mechanism. 4,799,715, Cl. 285-215.000.

Gould Inc.: *See*—
Tekippe, Vincent J., 4,799,751, Cl. 350-96.150.

Govekar, Craig F.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.

Grabher, Thomas: *See*—
Tonshoff, Hans K.; Grabher, Thomas; Gosebruch, Harald; and Jendryschik, Jurgen, 4,799,472, Cl. 125-11.00R.

Gradeff, Peter S.; and Schreiber, Fred G., to Rhone Poulenc, Inc. Anhydrous cerous nitrate-ammonium nitrate complex and a process for its preparation from ceric ammonium nitrate. 4,800,072, Cl. 423-396.000.

Graff, William P.: *See*—
Watson, John P.; and Graff, William P., 4,799,720, Cl. 292-299.000.

Graham, Andrew C.; and Fitzpatrick, Mark E., to Gazelle Microcircuits, Inc. TTL compatible output buffer. 4,800,303, Cl. 307-450.000.

Graham, Martin H., to And Yet, Inc. Balun. 4,800,344, Cl. 333-25.000.

Grain Processing Corporation: *See*—
Harvey, Richard D.; and Klem, Robert E., 4,799,964, Cl. 106-436.000.

Gras, Elie, to Anver. Process and apparatus for obtaining plastic molded objects. 4,800,049, Cl. 264-26.000.

Grass, Alfred, to Alfred Grass Ges.m.b.H. Metallwarenfabrik. Hinge frame with easily-releasable attachment of the furniture-side cover bracket to the furniture piece. 4,799,289, Cl. 16-236.000.

Grass Valley Group, Inc., The: *See*—
Barnett, Ronnie D.; and Parkes, Steven M., 4,800,432, Cl. 358-160.000.

Green, Eugene L., Sr.; and Taylor, Jefferson H., to Wilson Engraving Company, Inc. Measurement of image area from stored pixel data. 4,800,287, Cl. 250-560.000.

Greenberg, Craig B.: *See*—
Ovens, Kevin M.; Maxey, Jay A.; and Greenberg, Craig B., 4,800,296, Cl. 307-291.000.

Greene, Marc B. Shoulder belt adjuster. 4,799,737, Cl. 297-468.000.

Greenwood, David: *See*—
Baxter, Anthony G. W.; Bostock, Stephen B.; and Greenwood, David, 4,799,960, Cl. 106-22.000.

Greffet, Jean-Jacques: *See*—
Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, 4,799,788, Cl. 356-45.000.

Greif, Jonathan D. Anti-theft alarm system for motor vehicles. 4,800,361, Cl. 340-63.000.

Greiner, Walter: *See*—
Joseph, Johannes; Bleicher, Maximilian; and Greiner, Walter, 4,800,381, Cl. 340-764.000.

Greyhawk Systems, Inc.: *See*—
Kahn, Frederick J.; Nevis, Elizabeth A.; and Leff, Jerry, 4,799,770, Cl. 350-331.00R.

Grier, John K.; and McGuire, Dane T., to Grier-McGuire Inc. "Twist-lock" gas nozzle for a heat treating furnace. 4,799,881, Cl. 432-77.000.

Grier-McGuire Inc.: *See*—
Grier, John K.; and McGuire, Dane T., 4,799,881, Cl. 432-77.000.

Griffen, Neil C., to Toledo Scale Corporation. Digital load shift compensation. 4,799,558, Cl. 177-25.000.

Griffith, John D., to Sulzer Brothers Limited. Weff yarn feed for a weaving loom. 4,799,516, Cl. 139-435.000.

Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, to Hughes Aircraft Company. Optical data processing systems and methods for matrix inversion, multiplication, and addition. 4,800,519, Cl. 364-822.000.

Grollier, Jean-Francois; and Beauquey, Bernard, to Societe Anonyme dite: L'Oreal. Capillary cosmetic composition for washing disentangling hair containing a plant extract containing saponins. 4,800,080, Cl. 424-74.000.

Grosch, Michael: *See*—
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.

Grossman, Mark W.; and George, William A., to GTE Products Corporation. Filter for isotopic alteration of mercury vapor. 4,800,284, Cl. 250-505.100.

Grotkasten, Klaus: *See*—
Drewel, Gunter; Enoch, Horst; and Grotkasten, Klaus, 4,800,059, Cl. 264-502.000.

Gruber, Norman G.: *See*—
Krauss, Owen T.; and Gruber, Norman G., 4,799,389, Cl. 73-863.310.

Grunwald, John J.; Klein, Igal; and Whitmore, Bryan, to MacDermid, Incorporated. Mechanical plating with oxidation-prone metals. 4,800,132, Cl. 428-560.000.

GTE Products Corporation: *See*—
Grossman, Mark W.; and George, William A., 4,800,284, Cl. 250-505.100.
Kemp, Preston B., Jr.; Johnson, Walter A.; and Kopatz, Nelson E., 4,800,064, Cl. 419-36.000.
Mizuhara, Howard, 4,799,532, Cl. 164-47.000.
Poster, Thomas J., Jr., 4,800,588, Cl. 379-412.000.

Guermonprez, Claude. Protection and/or decorative device for apertures in walls, windows and the like. 4,799,524, Cl. 160-84.100.

Guindon, Yvan: *See*—
Adams, Julian; and Guindon, Yvan, 4,800,228, Cl. 549-470.000.

Gulf Nuclear, Inc.: *See*—
Acree, Elick H., 4,799,552, Cl. 166-305.100.

Gullick Dobson Limited: *See*—
Ward, Richard, 4,799,510, Cl. 137-596.150.

Gully, John H.: *See*—
Weldon, William F.; Gully, John H.; and Pichot, Mark A., 4,800,311, Cl. 310-178.000.

Gunn, Erwin T.; Bigler, John M.; and Hamill, Patrick J., to Boeing Company, The. Baggage and cargo container. 4,799,600, Cl. 220-1.500.

Gupta, Avinash K.: *See*—
Hanrahan, Robert J.; and Gupta, Avinash K., 4,799,357, Cl. 60-673.000.

Gurcan, Mustafa; and Cruchon, Jean-Claude, to Alcatel Thomson Faisceaux. E-plane type wide band composite filter. 4,800,349, Cl. 333-208.000.

Guskov, Valery V.: *See*—
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg I.; and Sizova, Svetlana I., 4,799,919, Cl. 474-205.000.

Gustav Hessmert KG: *See*—
Hessmert, Gustav-Adolf, 4,799,592, Cl. 206-504.000.

Gyroteq Corporation: *See*—
Suchy, Helmut, 4,799,667, Cl. 272-36.000.

Gysi, Peter, to ELPATRONIC AG. Conveyor device for workpieces. 4,799,585, Cl. 198-743.000.

H. Stoll GmbH & Co.: *See*—
Goller, Ernest; and Walker, Fritz, 4,799,365, Cl. 66-166.000.

Haas, Fred. Sliding window. 4,799,332, Cl. 49-408.000.

Haas, Hans: *See*—
Klee, Helmut; Haas, Hans; Kowalski, Werner; and Dahmen, Theo, 4,800,055, Cl. 264-118.000.

Habbersett, John I.: *See*—
Westfall, Norman R.; Martini, James A.; and Habbersett, John I., 4,799,333, Cl. 49-446.000.

Haber, Terry M., to Habley Medical Technology Corporation. Syringe, having self-contained, sterile, medication applying swab. 4,799,926, Cl. 604-187.000.

Habley Medical Technology Corporation: *See*—
Haber, Terry M., 4,799,926, Cl. 604-187.000.

Haelsig, Richard T.: *See*—
Craig, Philip A.; Haelsig, Richard T.; Kent, John D.; and Schmoker, Duane S., 4,800,062, Cl. 376-272.000.

Hagan, Edward F., to Du Pont de Nemours, E. I., and Company. Rotary developer and method for its use. 4,799,993, Cl. 156-644.000.

Hagmann, Walter: *See*—
Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, 4,800,363, Cl. 340-310.00A.

Hahn, Ortwin; and Hummler, Johannes, to Hahn, Ortwin. Adaptive control process for foaming and fusing plastics. 4,800,050, Cl. 264-40.600.

Haissig, Manfred: *See*—
Ahrens, Max; and Haissig, Manfred, 4,799,533, Cl. 164-137.000.

Hakamatsuka, Yasuharu; and Watanabe, Kazuhiro, to Olympus Optical Co., Ltd. Glass ceramic dental crown and method of manufacturing the same. 4,799,887, Cl. 433-212.100.

Hakkei, Kouichi: *See*—
Izaki, Kansei; Kawakami, Takamasa; Hakkei, Kouichi; and Ando, Kazuhiro, 4,800,182, Cl. 501-92.000.

Hale, James L.; and Hodges, Harold D., to Amoco Corporation. Means to facilitate handling of core members and rolls of material. 4,799,721, Cl. 294-1.100.

Hall, George R., II: *See*—
Barnett, Daniel C.; and Hall, George R., II, 4,799,394, Cl. 73-864.810.

Hall, Jerry A.: *See*—
Van Gompel, James; and Hall, Jerry A., 4,799,840, Cl. 410-42.000.

Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Coin chute construction. 4,799,580, Cl. 194-235.000.

Hallerback, Stig, to SKF Nova AB. Gear wheel. 4,799,918, Cl. 474-161.000.

Halliburton Company: *See*—
Harris, Phillip C.; and Sandy, Joe M., 4,799,550, Cl. 166-300.000.
Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., 4,799,546, Cl. 166-250.000.

Hamatani, Toshiji: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.

Hamer, R. Russell; Effland, Richard C.; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals, Inc. Pyrrolo(1,2-b)cinnolines. 4,800,203, Cl. 514-248.000.

Hamill, Patrick J.: *See*—
Gunn, Erwin T.; Bigler, John M.; and Hamill, Patrick J., 4,799,600, Cl. 220-1.500.

Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply system for off-road vehicle. 4,799,565, Cl. 180-69.400.

Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, to Honda Giken Kogyo Kabushiki Kaisha. Off-road vehicle. 4,799,708, Cl. 280-796.000.

Haneda, Hisao: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.

Hanna, Junichi: *See*—
Kansi, Masahiro; Hanna, Junichi; and Shimizu, Isamu, 4,800,173, Cl. 37-081.000.

Hanrahan, Robert J.; and Gupta, Avinash K., to Solar Reactor Technologies, Inc. Closed loop regeneration system for generating mechanical energy and the method therefor. 4,799,357, Cl. 60-673.000.

Hanselmann, Urs: *See*—
Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, 4,800,363, Cl. 340-310.00A.

Hansma, Paul K.; and Sonnenfeld, Richard, to University of California, The Regents of the. High resolution atomic force microscope. 4,800,274, Cl. 250-306.000.

Hanson, Donald W.: *See*—
Hargreaves, Thomas E.; and Hanson, Donald W., 4,799,496, Cl. 128-772.000.

Hanson, Steven D.: *See*—
Lichau, James W.; Lichau, Patricia K.; and Hanson, Steven D., 4,799,340, Cl. 52-170.000.

Hansson, Torbjorn, to Flakt AB. Arrangement in the drying section of a paper machine. 4,799,318, Cl. 34-117.000.

Harada, Koosuke; and Sakamoto, Hiroshi, to Nishimu Electronics Industries Co., Inc. PWM inverter with a saturable core. 4,800,476, Cl. 363-16.000.

Harada, Toru; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Light-sensitive material containing silver halide, reducing agent and polymerizable compound. 4,800,148, Cl. 430-138.000.

Harasaki, Hayatsugu, to Mazda Motor Corporation. Arrangements for forming rear partial structures of vehicle body constructions. 4,799,730, Cl. 296-195.000.

Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, to BBC Brown, Boveri Aktiengesellschaft. High-temperature storage battery. 4,800,143, Cl. 429-153.000.

Harben, Grover S., III, to Centennial Machine Company, Inc. Gizzard peeling apparatus. 4,799,292, Cl. 17-11.000.

Hardy, Robert M., to General Electric Company. Register-stack apparatus. 4,800,491, Cl. 364-200.000.

Hargreaves, Thomas E.; and Hanson, Donald W., to Lake Region Manufacturing Company, Inc. Guide wire handle. 4,799,496, Cl. 128-772.000.

Hargreaves, William P., to TriQuint Semiconductor, Inc. Method and apparatus for removably attaching semiconductor packages to circuit boards. 4,799,892, Cl. 439-72.000.

Harley, Naomi H.; and Maiello, Mark L., to New York University. Environmental gamma-ray and radon detector. 4,800,272, Cl. 250-253.000.

Harris, G. Bryn: *See*—
Peacey, John G.; and Harris, G. Bryn, 4,800,003, Cl. 204-70.000.

Harris, Phillip C.; and Sandy, Joe M., to Halliburton Company. Subterranean formation treating with delayed crosslinking gel fluids. 4,799,550, Cl. 166-300.000.

Harrison, Anthony W., to Lucas Industries public limited company. Brake actuation systems for vehicles. 4,799,355, Cl. 60-562.000.

Hart, William G.: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.

Hartmuller, Herbert: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.

Hartsaw, Robert E. Illuminated cargo rack. 4,800,470, Cl. 362-73.000.

Hartsuiker, Hendrik; and Knapp, Dorcel W., to Continental Grain Company. Drive mechanism for bucket elevators. 4,799,584, Cl. 198-709.000.

Harvey, Richard D.; and Klem, Robert E., to Grain Processing Corporation. Preparation of filler compositions for paper. 4,799,964, Cl. 106-436.000.

Hasegawa, Akira: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.

Hasegawa, Yuji: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.

Hassick, Denis E.; and Miknevich, Joseph P., to Calgon Corporation. Flocculation of suspended solids from aqueous solutions. 4,800,039, Cl. 252-181.000.

Hathaway, Susan J.; and Pyles, Robert A., to General Electric Company. Functionalized thermoplastic polymers, blends prepared therefrom, and methods for preparing blends. 4,800,218, Cl. 525-433.000.

Hattori, Shigeru; and Asakura, Toshimitsu, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,799,569, Cl. 180-219.000.

Hattori, Yoshiyuki: *See*—
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.

Haug, Joachim, to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH. Machine for sequential manufacture of incandescent lamp filaments. 4,799,518, Cl. 140-71.500.

Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , to La Telemecanique Electrique. Electromagnetic switching apparatus with interchangeable switches. 4,800,352, Cl. 335-132.000.

Hausdorf, Jorg; Kandler, Joachim; and Siekermann, Volker, to Carl Freudenberg, Firma. Method for cleaning apparatus for fabricating reactive multiple-component mixtures containing isocyanate. 4,799,967, Cl. 134-38.000.

Havens, Marvin R., to W. R. Grace & Co. Agent for imparting antistatic characteristics to a thermoplastic polymer and a thermoplastic polymer composition containing the agent. 4,800,115, Cl. 428-178.000.

Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., to National Standard Company. Localization needle assembly. 4,799,495, Cl. 128-754.000.

Hawkins, Jeffrey S.: *See*—
Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., 4,799,495, Cl. 128-754.000.

Hawkins, Mark C.: *See*—
Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., 4,799,495, Cl. 128-754.000.

Hawkins, Warren E.: *See*—
Eppley, William J.; and Hawkins, Warren E., 4,800,141, Cl. 429-116.000.

Hayashi, Kazumi: *See*—
Demura, Hiroshi; Kawahashi, Akira; Hayashi, Kazumi; and Kokubu, Sadao, 4,799,769, Cl. 350-331.00R.

Hayashi, Masahiro: *See*—
Ohta, Toshihiko; Okada, Fujio; and Hayashi, Masahiro, 4,800,121, Cl. 428-364.000.

Hayashibara, Ken: *See*—
Masaki, Kazumi, 4,800,329, Cl. 323-242.000.

Haydon, Susen J., to Interpat Ltd. Collapsible cleaning implement. 4,799,283, Cl. 15-229.100.

Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., to Phillips Petroleum Company. Catalytic cracking process. 4,800,014, Cl. 208-157.000.

Hayward, William C., to Northrop Corporation. Method and apparatus for MOSFET radiation failure circumvention. 4,800,299, Cl. 307-308.000.

Hebert, Gary; and Leone, Stacey. Portable boarding platform. 4,799,447, Cl. 114-362.000.

Heckmann, Johannes; and May, Wolfgang, to Dragerwerk Aktiengesellschaft. Device for detecting gases which must be treated before testing. 4,800,067, Cl. 422-86.000.

Hedges, Raymond: *See*—
Foster, Bruce A.; and Hedges, Raymond, 4,799,556, Cl. 173-43.000.

Heffler, Michael J.: *See*—
Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., 4,800,485, Cl. 364-200.000.

Heidelberger Druckmaschinen AG: *See*—
Pfizenmaier, Wolfgang, 4,799,660, Cl. 270-21.100.

Heinz, Robert: *See*—
Buehler, Volker; Hofmann, Friedbert; and Heinz, Robert, 4,800,086, Cl. 424-4.".000.

Held, Manfred; and Kirsche, Horst, to Messerschmitt-Bolkow-Blohm GmbH. Projectile ignition device. 4,799,427, Cl. 102-215.000.

Helena Laboratories Corporation: *See*—
Mayes, Ronald A.; and Golias, Tipton A., 4,799,597, Cl. 215-250.000.

Helix Technology Corporation: *See*—
Nicoll, Harry G., 4,799,359, Cl. 62-6.000.

Hellman, Olof C.: *See*—
Herbots, Nicole; and Hellman, Olof C., 4,800,100, Cl. 427-38.000.

Hellman, Robert R., Jr., to Eastman Kodak Company. Lockable, rotating electrophoresis device. 4,800,010, Cl. 204-299.00R.

Helm Products, Inc.: *See*—
Lisowski, Walter E., 4,799,444, Cl. 114-221.00R.

Helmer, George L. Arm locking device for weightlifters. 4,799,675, Cl. 272-123.000.

Helsa-Werke Helmut Sandler GmbH & Co. KG: *See*—
Smolik, Klaus, 4,800,190, Cl. 502-416.000.

Hemming, Val G.: *See*—
Prince, Gregory; Chanock, Robert; and Hemming, Val G., 4,800,078, Cl. 424-86.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Friese, Hans-Herbert; Ploog, Uwe; and Prinz, Wolfgang, 4,799,932, Cl. 8-94.230.
Friese, Hans-Herbert; Pieper, Friedrich; and Bosse, Reinhard, 4,800,045, Cl. 260-400.000.

Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., to Halliburton Company. Drill pipe conveyed logging system. 4,799,546, Cl. 166-250.000.

Herbots, Nicole; and Hellman, Olof C., to Massachusetts Institute of Technology. Combined ion and molecular beam apparatus and method for depositing materials. 4,800,100, Cl. 427-38.000.
Herman Miller, Inc.: *See*—
Goodman, Steve F., 4,799,436, Cl. 109-50.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Bellmer, Klaus; and Capelle, Gerd, 4,799,874, Cl. 425-131.100.
Hernandez-Ruiz, Jose E.: *See*—
Lazcano-Navarro, Arturo; Alcantara, Miguel A.; and Hernandez-Ruiz, Jose E., 4,799,651, Cl. 166-268.000.
Herrmann, Raymond J., to Ciba Corning Diagnostics Corp. Specimen cup and cap assembly for clinical analyzer. 4,799,599, Cl. 215-307.000.
Herter Rotor Marketing Division & Co. Beteiligungsgesellschaft mbH: *See*—
Martin, Michael, 4,799,860, Cl. 416-119.000.
Hertz, Carl H. Compensation method and device for ink droplet deviation of an ink jet. 4,800,396, Cl. 346-1.100.
Hessmert, Gustav-Adolf, to Gustav Hessmert KG. Stackable crates of synthetic material for bottles, especially wine bottles. 4,799,592, Cl. 206-504.000.
Heumuller, Rudolf: *See*—
Dapperheld, Steffen; Heumuller, Rudolf; and Wildt, Manfred, 4,800,012, Cl. 204-73.00R.
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, to Ntl. Inst. of Agrobiological Resources; and Nihon Bunko Kogyo Kabushiki Kaisya. Flow chamber and electromanipulator incorporating same. 4,800,163, Cl. 435-287.000.
Hickel, Sigrun; and Franke, Wolfgang, to Braun Aktiengesellschaft. Kitchen apparatus for preparing food. 4,799,626, Cl. 241-37.500.
Hicks, Gregory F., to Northern Telecom Limited. Circuit and method for monitoring the quality of data in a data stream. 4,800,562, Cl. 371-5.000.
Hideshima, Masayuki, to Tokyo Kogaku Kikai Kabushiki Kaisha. Tonometer. 4,799,489, Cl. 128-648.000.
Hieftje, Gary M.; Honigs, David E.; and Hirschfeld, Thomas B., to Indiana University Foundation. Methods and devices for near-infrared evaluation of physical properties of samples. 4,800,279, Cl. 250-339.000.
Higgins, William R.: *See*—
Humphries, David R.; Fetterhoff, Donald C.; and Higgins. William R., 4,799,631, Cl. 244-118.500.
Higgins, Willis E.: *See*—
Vaughan, James C., 4,800,590, Cl. 380-25.000.
Highton, Frederick J.: *See*—
White, Robert L.; Highton, Frederick J.; Ito, Kazuo; and Miller, Gary L., 4,800,365, Cl. 341-119.000.
Higuchi, Seijun: *See*—
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Maruta, Akinori, 4,800,134, Cl. 428-626.000.
Hildeman, Gregory J.: *See*—
Langenbeck, Sharon L.; and Hildeman, Gregory J., 4,799,978, Cl. 148-437.000.
Hildinger, Otto: *See*—
Kotthaus, Erich; Ginier, Ami; and Hildinger, Otto, 4,799,337, Cl. 51-287.000.
Hill, D. James, to Vanguard-Hill, Inc. Decorative switch plate and receptacle wall plate. 4,800,239, Cl. 174-66.000.
Hinckle, John E., to Apparel Machinery International, Ltd. Method and apparatus for clamping and manipulating workpieces during a sewing operation. 4,799,438, Cl. 112-121.120.
Hinckley, Charles J.: *See*—
Paugh, James J., Jr.; and Hinckley, Charles J., 4,799,861, Cl. 416-186.00R.
Hinderer, Nelson A.: *See*—
Kujawa, Harry F.; and Hinderer, Nelson A., 4,799,716, Cl. 285-334.200.
Hirabayashi, Tamio: *See*—
Kikuchi, Nobuaki; Fukuyama, Hirohisa; Hirabayashi, Tamio; and Imai, Kouichi, 4,799,743, Cl. 312-228.000.
Hirabayashi, Yuzi: *See*—
Ina, Katsuhiro; Akiyama, Susumu; and Hirabayashi, Yuzi, 4,800,499, Cl. 364-431.030.
Hirano, Yasuyuki: *See*—
Kumasaka, Taiichi; Hirano, Yasuyuki; Ozaki, Katsuhiko; and Sawada, Koichi, 4,799,416, Cl. 83-397.000.
Hirao, Takashi: *See*—
Ishihara, Shinichiro; Kitagawa, Masatoshi; and Hirao, Takashi, 4,800,174, Cl. 437-101.000.
Hiraoka, Fumio: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.
Hirose, Yoshio: *See*—
Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, 4,800,321, Cl. 313-639.000.
Hiroshima, Motoharu: *See*—
Yorita, Tadahiro; and Hiroshima, Motoharu, 4,800,347, Cl. 333-202.000.
Hirschfeld, Thomas B.: *See*—
Hieftje, Gary M.; Honigs, David E.; and Hirschfeld, Thomas B., 4,800,279, Cl. 250-339.000.
Hirschfeld, Tomas B., to University of California, The Regents of the. Remote multi-position information gathering system and method. 4,799,756, Cl. 350-96.180.
Hisano, Kiyoshi: *See*—
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, 4,800,483, Cl. 364-200.000.
Hitachi Automotibe Engineering: *See*—
Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, 4,799,380, Cl. 73-116.000.
Hitachi Koki Company, Ltd.: *See*—
Kumasaka, Taiichi; Hirano, Yasuyuki; Ozaki, Katsuhiko; and Sawada, Koichi, 4,799,416, Cl. 83-397.000.
Hitachi, Ltd.: *See*—
Itagaki, Teruo; and Noro, Teruo, 4,800,563, Cl. 371-13.000.
Nagano, Masami; Atago, Takeshi; and Manaka, Toshio, 4,799,469, Cl. 123-418.000.
Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, 4,799,380, Cl. 73-116.000.
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, 4,800,483, Cl. 364-200.000.
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, 4,800,565, Cl. 372-45.000.
Hochberg, Jerome, to Du Pont de Nemours, E. I., and Company. Recovery of silver from photographic film with high shear and caustic. 4,799,954, Cl. 75-118.00P.
Hochiki Kabushiki Kaisha: *See*—
Akiba, Kouji; Kitajima, Akira; and Arai, Yoshio, 4,800,285, Cl. 250-554.000.
Hockley, Stephen J., to Action Pumping Services Ltd. Hydropneumatic pumpsets. 4,799,864, Cl. 417-7.000.
Hodges, Harold D.: *See*—
Hale, James L.; and Hodges, Harold D., 4,799,721, Cl. 294-1.100.
Hoechst Aktiengesellschaft: *See*—
Dapperheld, Steffen; Heumuller, Rudolf; and Wildt, Manfred, 4,800,012, Cl. 204-73.00R.
Klee, Helmut; Haas, Hans; Kowalski, Werner; and Dahmen, Theo, 4,800,055, Cl. 264-118.000.
Hoechst Celanese Corporation: *See*—
McMahon, Paul E.; and Chung, Tai-Shung, 4,799,985, Cl. 156-166.000.
Shepherd, James P., 4,800,188, Cl. 502-159.000.
Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Hamer, R. Russell; Effland, Richard C.; and Klein, Joseph T., 4,800,203, Cl. 514-248.000.
Tegeler, John J.; and Shoger, Kirk D., 4,800,200, Cl. 514-211.000.
Hoekstra, Jan-Pieter: *See*—
Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., 4,800,397, Cl. 346-1.100.
Hoerbiger Ventilwerke Aktiengesellschaft: *See*—
Hrabal, Hans, 4,799,507, Cl. 137-516.210.
Hoffman, Drew S.: *See*—
Lowenthal, Richard W.; Reeber, Larke E.; Hoffman, Drew S.; and Ramsay, Michael, 4,800,380, Cl. 340-750.000.
Hoffman, Galen W., Jr. Sailboat racing board game. 4,799,685, Cl. 273-246.000.
Hoffmann-La Roche Inc.: *See*—
Alig, Leo; and Muller, Marcel, 4,800,206, Cl. 514-332.000.
Kaufman, Richard; and Wesolowski, Alex, 4,800,168, Cl. 436-124.000.
Hofmann, Friedbert: *See*—
Buehler, Volker; Hofmann, Friedbert; and Heinz, Robert, 4,800,086, Cl. 424-497.000.
Hogan, William C.; and Gierhart, Dennis O., to Ralston Purina Company. High moisture animal food product containing a filamentous fungal biomass. 4,800,093, Cl. 426-46.000.
Hoggan Health Industries, Inc.: *See*—
Hoggan, Lynn D.; Van Wagoner, Earl, III; and Balogh, Edward N., 4,799,671, Cl. 272-118.000.
Hoggan, Lynn D.; Van Wagoner, Earl, III; and Balogh, Edward N., to Hoggan Health Industries, Inc. Weight lifting exercise apparatus. 4,799,671, Cl. 272-118.000.
Hoholick, Joseph: *See*—
Glass, Michael; Hoholick, Joseph; Dombroski, Amy; and Faust, Steven M., 4,800,091, Cl. 426-3.000.
Hoke, Bryan C., Jr., to Thermacore, Inc. Self regulating heat pipe. 4,799,537, Cl. 165-32.000.
Holland, Floyd H.: *See*—
Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., 4,800,014, Cl. 208-157.000.
Holm, David A.; and Densult, Wesley C. Trailer jack using full sized spare tire. 4,799,648, Cl. 254-420.000.
Holmes Products Corp.: *See*—
Shin-Chin, Shao, 4,799,858, Cl. 416-110.000.
Hom, Foo S.; and Ebert, William R., to R. P. Scherer Corporation. Sustained release method and product. 4,800,083, Cl. 424-457.000.
Homann, Helmut F.; and Piper, Robert J. Antenna polar mount assembly. 4,800,394, Cl. 343-882.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, 4,799,565, Cl. 180-69.400.
Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, 4,799,708, Cl. 280-796.000.
Hattori, Shigeru; and Asakura, Toshimitsu, 4,799,569, Cl. 180-219.000.
Ishikawa, Yoshikazu; and Yamaguchi, Kouji, 4,799,467, Cl. 123-399.000.
Konno, Tsuneo, 4,799,463, Cl. 123-90.170.
Shimizu, Yasuo, 4,799,566, Cl. 180-79.100.
Tanaka, Akira, 4,800,500, Cl. 364-431.080.
Tanaka, Koichi, 4,799,568, Cl. 180-219.000.

Honda, Minoru; Fukuta, Toshiaki; Yamaguchi, Akihide; and Ikuta, Kenzi, to Nippondenso Co., Ltd. Supporting structure for air-cleaned assembly. 4,799,470, Cl. 123-470.000.

Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., to Siemens Aktiengesellschaft. Circuit arrangement with a processor and at least two read-write memories. 4,800,532, Cl. 365-226.000.

Honeywell Inc.: *See*—
Eppley, William J.; and Hawkins, Warren E., 4,800,141, Cl. 429-116.000.
Gesvent, George, 4,800,238, Cl. 174-52.100.
Silverstein, Louis D.; and Monty, Robert W., 4,800,375, Cl. 340-703.000.

Honigs, David E.: *See*—
Hieftje, Gary M.; Honigs, David E.; and Hirschfeld, Thomas B., 4,800,279, Cl. 250-339.000.

Hood, Thomas G.: *See*—
Meyer, Stephen F.; and Hood, Thomas G., 4,799,745, Cl. 350-1.700.

Hopkins, Thomas M.: *See*—
Crump, Druce K.; Cooper, Lance A.; and Hopkins, Thomas M., 4,799,995, Cl. 162-76.000.

Hori, Katsuya; and Furuya, Tsuneo, to Sony Corporation. Circuit for operating finite fields. 4,800,515, Cl. 364-746.100.

Horibe, Tatutake: *See*—
Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, 4,799,353, Cl. 57-281.000.

Horiguchi, Fumio: *See*—
Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, 4,800,530, Cl. 365-189.000.

Horikawa, Yoichi, to Yoshida Kogyo K. K. Apparatus for threading a slider onto opposed stringers for slide fastener. 4,799,313, Cl. 29-768.000.

Horikawa, Yoshiaki, to Olympus Optical Co., Ltd. Scanning type optical microscope. 4,800,269, Cl. 250-234.000.

Horikoshi, Yukio: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Tanzawa, Kenji, 4,799,867, Cl. 418-1.000.

Horio, Kazuya: *See*—
Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, 4,800,362, Cl. 340-78.000.

Horn, Glenn T.: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.

Horn, Marcus J.; and Recchia, Joanne, to Applied Protein Technologies, Inc. Method and apparatus for monitoring the automated synthesis of peptides. 4,800,166, Cl. 436-55.000.

Horng, Weiyo. Roll-up flush toilet. 4,799,272, Cl. 4-312.000.

Horst, Kenneth R.: *See*—
Siedlecki, Walter F., Jr.; and Horst, Kenneth R., 4,799,376, Cl. 73-29.000.

Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., to Tandem Computers Incorporated. Multiple data patch CPU architecture. 4,800,486, Cl. 364-200.000.

Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, to Canon Kabushiki Kaisha. Sequence controller using pulse counts to activate/deactivate controlled elements. 4,800,482, Cl. 364-140.000.

Hosogai, Daijiro: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.

Hosoya, Eiji: *See*—
Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, 4,799,565, Cl. 180-69.400.
Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, 4,799,708, Cl. 280-796.000.

Hosoya, Naoki: *See*—
Imai, Shin-ichi; and Hosoya, Naoki, 4,800,579, Cl. 377-60.000.

Hosoya, Takamasa, to Olympus Optical Co., Ltd. Image photography apparatus having switch in remote control cable for preventing erroneous photography. 4,800,437, Cl. 358-244.000.

Hostettler, Fritz. Low temperature, storage stable mixtures of prepolymers and flow modifiers. 4,800,040, Cl. 252-182.200.

Hotma, Johan J. K., to Rauma-Repola Oy. Board press. 4,799,425, Cl. 100-194.000.

Houska, Jeffrey: *See*—
Davis, Donald F.; Brodsky, Stuart; and Houska, Jeffrey, 4,799,927, Cl. 604-192.000.

Houtman, Eliberthus; and Brouwer, Geert, to U.S. Philips Corporation. X-ray analysis apparatus. 4,800,580, Cl. 378-71.000.

Howa Machinery, Ltd.: *See*—
Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, 4,799,353, Cl. 57-281.000.

Howe, Michael W., to Calgon Corporation. Method for improving magnesium oxide steel coatings using non-aqueous solvents. 4,799,969, Cl. 148-6.14R.

Hoyack, Mark E.: *See*—
Krishnaswamy, Prem; and Hoyack, Mark E., 4,800,017, Cl. 210-219.000.

Hrabal, Hans, to Hoerbiger Ventilwerke Aktiengesellschaft. Adjustable compressor valve which can accommodate changing operating conditions in the compressor to which it is attached. 4,799,507, Cl. 137-516.210.

Hryako, Paul W., to Dunlop Construction Products Inc. Means for attaching sheet material to a substrate. 4,799,845, Cl. 411-542.000.

Hsieh, Wu H. Carrying holder. 4,799,610, Cl. 224-266.000.

Hsu, Chien-Na. Audio-actuated digital clock with double selections. 4,800,544, Cl. 368-69.000.

Huang, Shu-Jen W.: *See*—
Kiss, Charles R.; and Huang, Shu-Jen W., 4,800,217, Cl. 525-163.000.

Huber, Mary L. B.: *See*—
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.

Hudson, Timothy R., to Efco Corporation. Sash locking and sealing assembly. 4,799,330, Cl. 49-62.000.

Huggins, Raymond W., to Boeing Company, The. Coherence multiplexing of optical sensors. 4,799,797, Cl. 356-345.000.

Hughes Aircraft Company: *See*—
Chen, James C.; Wong, Wah S.; and Pao, Cheng K., 4,800,420, Cl. 357-76.000.
Ferrer, John J., 4,799,765, Cl. 350-174.000.
Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, 4,800,519, Cl. 364-822.000.
Niskala, Gary G., 4,799,854, Cl. 414-737.000.
Sterling, Rodney D., 4,799,773, Cl. 350-342.000.
Williamson, Weldon S., 4,800,281, Cl. 250-427.000.
Wreede, John E., 4,799,746, Cl. 350-3.600.

Hughes, Owen P. Hockey stick. 4,799,682, Cl. 273-67.00A.

Huls Aktiengesellschaft: *See*—
Jadamus, Hans; and Richter, Klaus-Peter, 4,800,120, Cl. 428-286.000.

Hulsing, Rand H.; and Peters, Rex B., to Sundstrand Data Control, Inc. Angular rate sensor with phase shift correction. 4,799,385, Cl. 73-505.000.

Hummler, Johannes: *See*—
Hahn, Ortwin; and Hummler, Johannes, 4,800,050, Cl. 264-40.600.

Humphries, David R.; Fetterhoff, Donald C.; and Higgins, William R., to ATR International, Inc. Aircraft shell module. 4,799,631, Cl. 244-118.500.

Hunia, Robert M.: *See*—
Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., 4,799,963, Cl. 106-287.130.

Hunter, Kevin D.: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; and Schmidt, Alfred C., 4,800,506, Cl. 364-478.000.

Hunter, Robert M. Apparatus and technique for metering liquid flow. 4,799,388, Cl. 73-861.630.

Husmann, Robert J., to Omni Signal, Inc. Alarm locator module for picket barrier intrusion detection and location system. 4,800,366, Cl. 340-524.000.

Hussong, Dean R. Automatic high velocity evacuator dental suction device. 4,799,885, Cl. 433-95.000.

Hutchins, Charles L., to Texas Instruments Incorporated. Reconfigurable integrated circuit with enhanced testability of memory cell leakage. 4,800,332, Cl. 324-73.00R.

Hutchinson, Jack M. Remote control lighter-than-air toy with tether. 4,799,914, Cl. 446-225.000.

Huthmacher, Klaus: *See*—
Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, 4,800,044, Cl. 260-399.000.

Hydro Betong AB: *See*—
Georgii, Hans, 4,799,828, Cl. 405-195.000.

I E Sensors, Inc.: *See*—
Vetecnik, Ivan, 4,800,370, Cl. 340-573.000.

Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, to Superspine, Inc. Device permitting a user to simulate crawling motions to improve movement of the truncal muscles and spine. 4,799,475, Cl. 128-25.00R.

Ichimoto, Takehiko: *See*—
Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, 4,800,034, Cl. 252-56.00S.

Idemitsu Kosan Co., Ltd.: *See*—
Dasai, Masashi, 4,800,029, Cl. 252-32.500.
Kaneko, Masato; Nagakawa, Hiroshi; and Yamashita, Kenichi, 4,800,030, Cl. 252-32.500.
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, 4,800,013, Cl. 208-19.000.

Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, to Mitsui Toatsu Chemical, Incorporated. Process and apparatus for producing immobilized enzyme granules. 4,800,160, Cl. 435-177.000.

Iijima, Katsuhiko; and Itami, Kazuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Electric wheel drive. 4,799,564, Cl. 180-65.500.

Iijima, Yasuo, to Kabushiki Kaisha Toshiba. Portable electronic device with garbage collection function. 4,800,520, Cl. 364-900.000.

Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, to Kabushiki Kaisha Toshiba. High pressure sodium lamp. 4,800,321, Cl. 313-639.000.

Ikeda, Ken: *See*—
Tachita, Ryobun; Ikeda, Ken; and Teranishi, Akio, 4,800,577, Cl. 375-115.000.

Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, to NEC Corporation. Method of driving a two-dimensional CCD image sensor in a shutter mode. 4,800,435, Cl. 358-213.190.

Ikeda, Tomohiro: *See*—
Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, 4,800,358, Cl. 337-268.000.

Ikoma, Kazuhiko: *See*—
Okuno, Akiyasu; Watanabe, Masakazu; and Ikoma, Kazuhiko, 4,800,137, Cl. 428-698.000.
Ikuta, Kenzi: *See*—
Honda, Minoru; Fukuta, Toshiaki; Yamaguchi, Akihide; and Ikuta, Kenzi, 4,799,470, Cl. 123-470.000.
Ikuta, Tetsuya: *See*—
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.
Ilon, Bengt E., to Autotyp S.A. Snow chain for vehicle wheels. 4,799,522, Cl. 152-213.00R.
Imai, Kouichi: *See*—
Kikuchi, Nobuaki; Fukuyama, Hirohisa; Hirabayashi, Tamio; and Imai, Kouichi, 4,799,743, Cl. 312-228.000.
Imai, Shin-ichi; and Hosoya, Naoki, to Kabushiki Kaisha Toshiba. Charge transfer device provided with charge detection circuit of a floating gate system. 4,800,579, Cl. 377-60.000.
Imani, Yuuichi: *See*—
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.
Imperial Chemical Industries, PLC: *See*—
Nelson, Anthony J.; and Duggan, Peter J., 4,800,145, Cl. 430-58.000.
Imran, Mir A., to DataTrak, Inc. Electronic access card with visual display. 4,800,255, Cl. 235-382.000.
Ina, Katsuhiro; Akiyama, Susumu; and Hirabayashi, Yuzi, to Nippondenso Co., Ltd. Apparatus for processing engine operation detection signals. 4,800,499, Cl. 364-431.030.
INA Walzlager Schaeffler KG: *See*—
Rabe, Jurgen, 4,800,057, Cl. 264-229.000.
Inagaki, Shintaro; and Kobayashi, Akira, to Anritsu Corporation. Optical image transformation apparatus. 4,800,288, Cl. 250-578.000.
Indiana University Foundation: *See*—
Hieftje, Gary M.; Honigs, David E.; and Hirschfeld, Thomas B., 4,800,279, Cl. 250-339.000.
Inductran Inc.: *See*—
Bolger, John G.; and Ng, Lung S. B., 4,800,328, Cl. 320-2.000.
Industire Magneti Marelli S.r.l.: *See*—
May, Pierluigi; and Maggioni, Virginio, 4,799,742, Cl. 303-115.000.
Industrial Project Ltd.: *See*—
Collier, Richard J., 4,799,498, Cl. 128-774.000.
Industrie Zanussi S.p.A.: *See*—
Milocco, Claudio; Favret, Ugo; and Martegani, Antonio, 4,799,855, Cl. 415-143.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Accattino, Andrea; and Jans, Aldo, 4,800,403, Cl. 346-140.00R.
Oberto, Massimo, 4,800,306, Cl. 310-51.000.
Ing, Kuo S. Sabotage-proof lock device with elbow-shaped latches. 4,799,718, Cl. 292-36.000.
Ingalls, John P.; Maringer, Robert E.; and Wood, Ray D., to Battelle Development Corporation. Sheet caster cooling. 4,799,536, Cl. 164-479.000.
Ingle, Frank W.; and Claude, John P., to Medasonics, Inc. Ultrasonic transducer method and apparatus. 4,800,317, Cl. 310-334.000.
Inoue, Hidehiko: *See*—
Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, 4,800,435, Cl. 358-213.190.
Institut National de la Sante et de la Recherche Medicale-INSERM: *See*—
Bisconte, Jean-Claude, 4,800,164, Cl. 435-300.000.
Institute of Technology Precision Electrical Discharge Works: *See*—
Futamura, Shoji; and Kurihara, Masaki, 4,800,248, Cl. 219-69.00S.
Interatom GmbH: *See*—
Tittizer, Gabriel; and Junghans, Ewald, 4,799,462, Cl. 123-90.120.
Intercal Company: *See*—
Vogel, Ferdinand L., 4,799,956, Cl. 75-243.000.
Vogel, Ferdinand L., 4,799,957, Cl. 75-243.000.
InterMetro Industries Corp.: *See*—
Sudimak, Michael J.; and Cohn, Robert J., 4,799,818, Cl. 403-107.000.
International Buisness Machines Corporation: *See*—
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., 4,799,811, Cl. 400-279.000.
International Business Machines Corporation: *See*—
Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., 4,800,397, Cl. 346-1.100.
Allen, Robert D.; Frechet, Jean M. J.; Twieg, Robert J.; and Willson, Carlton G., 4,800,152, Cl. 430-270.000.
Broockman, Eric C.; and Cato, Robert T., 4,800,256, Cl. 235-467.000.
DeFazio, John J.; and McNamara, Timothy G., 4,800,564, Cl. 371-61.000.
Desai, Kamalesh S., 4,799,983, Cl. 156-89.000.
Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., 4,799,990, Cl. 156-636.000.
Simpson, John P.; Newman, Gary L.; Larnerd, James M.; and Emerick, Alan J., 4,799,616, Cl. 228-125.000.
International Fuel Cells Corporation: *See*—
Romanowski, William E.; and Suljak, George T., 4,800,138, Cl. 429-19.000.
Swarr, Thomas E.; and Trocciola, John C., 4,800,052, Cl. 264-65.000.
International Technidyne Corporation: *See*—
Mintz, Michael D., 4,799,488, Cl. 128-637.000.
Interpat Ltd.: *See*—
Haydon, Susen J., 4,799,283, Cl. 15-229.100.
Inujima, Takashi: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Iranmanesh, Ali; and Thomas, Mammen, to Advanced Micro Devices, Inc. Method for making bipolar and CMOS integrated circuit structures. 4,800,171, Cl. 437-31.000.
ISC Technologies, Inc.: *See*—
LaBudde, Edward V.; and Kay, Robert L., 4,799,429, Cl. 102-393.000.
Iseda, Atsuro: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.
Ishi, Yuuhei, to NEC Corporation. Synchronization burst transmit phase control system. 4,800,561, Cl. 370-104.000.
Ishibashi, Kazuhisa: *See*—
Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, 4,800,250, Cl. 219-121.630.
Ishihara, Shinichiro; Kitagawa, Masatoshi; and Hirao, Takashi, to Matsushita Electric Industrial Co., Ltd. Method for producing an amorphous silicon semiconductor device using a multichamber PECVD apparatus. 4,800,174, Cl. 437-101.000.
Ishii, Eiichi: *See*—
Yoshizawa, Shigeo; and Ishii, Eiichi, 4,800,338, Cl. 329-103.000.
Ishii, Tsuneo, to Pioneer Electronic Corporation. Disk recording and reproducing head system having track seeking for faulty addresses. 4,800,452, Cl. 360-78.140.
Ishikawa, Chuji: *See*—
Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, 4,800,398, Cl. 346-75.000.
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, to Tao Nenryo Kogyo Kabushiki Kaisha. Ultrasonic atomizing apparatus. 4,799,622, Cl. 239-102.200.
Ishikawa, Takatoshi: *See*—
Morimoto, Kiyoshi; and Ishikawa, Takatoshi, 4,800,153, Cl. 430-380.000.
Ishikawa, Yoshikazu; and Yamaguchi, Kouji, to Honda Giken Kogyo Kabushiki Kaisha. Throttle valve control system for an internal combustion engine. 4,799,467, Cl. 123-399.000.
Ishino, Tomoaki: *See*—
Toriwaki, Masao; Kawakami, Kinya; and Ishino, Tomoaki, 4,799,284, Cl. 15-230.120.
Ishiwatari, Makoto: *See*—
Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, 4,799,565, Cl. 180-69.400.
Ishizaki, Akira: *See*—
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.
Iso-Clear Systems Corporation: *See*—
Elfline, Geraldine S., 4,800,024, Cl. 210-665.000.
Isobe, Atsushi; Isobe, Masahiko; and Isobe, Naoki. Method for manufacturing a bar antenna. 4,799,310, Cl. 29-605.000.
Isobe, Masahiko: *See*—
Isobe, Atsushi; Isobe, Masahiko; and Isobe, Naoki, 4,799,310, Cl. 29-605.000.
Isobe, Naoki: *See*—
Isobe, Atsushi; Isobe, Masahiko; and Isobe, Naoki, 4,799,310, Cl. 29-605.000.
Isover Saint-Gobain: *See*—
Rias, Jean-Claude, 4,799,350, Cl. 53-399.000.
Isovolta Osterreichische Isolierstoffwerke Aktiengeseilschaft: *See*—
Pflug, Guenther; and Petershofer, Georg, 4,800,111, Cl. 428-121.000.
Isuzu Motors Limited: *See*—
Yanagisawa, Naoki; and Sato, Yoshihiko, 4,799,465, Cl. 123-256.000.
Itagaki, Teruo; and Noro, Teruo, to Hitachi, Ltd. Error processing method and apparatus for information processing system. 4,800,563, Cl. 371-13.000.
Itami, Kazuo: *See*—
Iijima, Katsuhiko; and Itami, Kazuo, 4,799,564, Cl. 180-65.500.
Ito, Hiroki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for forming a thin film. 4,799,454, Cl. 118-723.000.
Ito, Kazuo: *See*—
White, Robert L.; Highton, Frederick J.; Ito, Kazuo; and Miller, Gary L., 4,800,365, Cl. 341-119.000.
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, to Canon Kabushiki Kaisha. Reader printer. 4,800,413, Cl. 355-45.000.
Ito, Satoshi: *See*—
Oka, Tomoki; Kihira, Hiroshi; Matsuoka, Kazumi; and Ito, Satoshi, 4,800,165, Cl. 436-6.000.
Ito, Takeshi, to Machine Engineering Co., Ltd. Reduction gear. 4,799,396, Cl. 74-410.000.
Itoh, Akira: *See*—
Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, 4,800,310, Cl. 310-105.000.
Itoh, Masao: *See*—
Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, 4,800,310, Cl. 310-105.000.

Itoh, Saburo, to Matsuura Machinery Corporation. Pallet exchanging apparatus for machine tool. 4,799,582, Cl. 198-346.100.

Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, to Kabushiki Kasiha Toshiba. Semiconductor memory system with dynamic random access memory cells. 4,800,530, Cl. 365-189.000.

Itoh, Yuji: *See*—
Takahashi, Junichi; and Itoh, Yuji, 4,799,783, Cl. 351-206.000.

ITT Corporation: *See*—
Gerety, Eugene P.; and Vij, Jitender K., 4,800,523, Cl. 364-900.000.

Iversen, Arthur H.; and Whitaker, Stephen, to Iversen, Arthur H. Means for temperature control of heated surfaces. 4,799,543, Cl. 165-135.000.

Iwaizako, Akihiro; Nishii, Hiroshi; and Maruta, Seiki, to Nippon Air Brake Co., Ltd. Electropneumatic master controller for an air brake system. 4,799,740, Cl. 303-15.000.

Iwakoshi, Hiromitsu: *See*—
Kubo, Haruaki; Umeda, Mitsuru; and Iwakoshi, Hiromitsu, 4,799,838, Cl. 409-234.000.

Iwakura, Ken: *See*—
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.

Iwamoto, Masayuki: *See*—
Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, 4,799,968, Cl. 136-258.000.

Iwasaki, Kyuhachiro: *See*—
Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, 4,800,398, Cl. 346-75.000.

Iwasaki, Yasuhiro: *See*—
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.

Izaki, Kansei; Kawakami, Takamasa; Hakkei, Kouichi; and Ando, Kazuhiro, to Mitsubishi Gas Chemical Company, Inc. Silicon nitride-silicon carbide composite material and process for production thereof. 4,800,182, Cl. 501-92.000.

Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Maruta, Akinori. High corrosion resistant plated composite steel strip. 4,800,134, Cl. 428-626.000.

Izumiya, Hirotsugu: *See*—
Kajihara, Takehiro; Atsumi, Senji; and Izumiya, Hirotsugu, 4,800,320, Cl. 313-625.000.

J. C. Pardo and Sons: *See*—
Gabriele, Valentino, 4,799,690, Cl. 277-9.000.

J. R. Simplot: *See*—
Galland, Sherry A., 4,800,098, Cl. 426-637.000.

Jachmann, Emil F.: *See*—
D'Agosto, Nicholas A., III; Smith, Steven M.; and Jachmann, Emil F., 4,800,582, Cl. 379-216.000.

Jackson, Thomas, to Plessey Overseas Limited. Frequency synthesizer of the fractional type. 4,800,342, Cl. 331-10.000.

Jacobson, Earl C.: *See*—
Myers, Thomas W.; and Jacobson, Earl C., 4,799,706, Cl. 280-504.000.

Jacobson, Terry W., to Cray Research, Inc. Personnel antistatic test device. 4,800,374, Cl. 340-649.000.

Jacquemet, Georges, to Martelec - Societe Civile Particuliere. Electromagnetic pile driver. 4,799,557, Cl. 173-91.000.

Jadamus, Hans; and Richter, Klaus-Peter, to Huls Aktiengesellschaft. Structural components made from a fibrous reinforcing support and rubber and methods for their manufacture. 4,800,120, Cl. 428-286.000.

Jagenberg Aktiengesellschaft: *See*—
Bodewein, Jakob, 4,799,847, Cl. 414-790.800.

Jain, Kailash C.; and MacIver, Bernard A., to General Motors Corporation. Process for forming in a silicon oxide layer a portion with vertical side walls. 4,800,170, Cl. 437-24.000.

James, Richard N.: *See*—
Akers, Cliff; and James, Richard N., 4,799,728, Cl. 296-136.000.

Janda, Ralf: *See*—
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.

Janes, John B.; and Anderson, Carson I. Trailer hitching aid. 4,799,705, Cl. 280-477.000.

Janiszewski, Grzegorz K., to AB Volvo. Motor vehicle gearbox with one-way clutch in first gear. 4,799,395, Cl. 74-331.000.

Jankowiak, Roman; and Lutocka, John A., Jr., to Conax Florida Corporation. Survival apparatus. 4,799,907, Cl. 441-42.000.

Janni, Albert S., to Duro-Last Roofing, Inc. Method of fabricating polymer-coated fabric outside corner pieces for single-ply polymer-coated fabric core roof membranes. 4,799,986, Cl. 156-196.000.

Jans, Aldo: *See*—
Accattino, Andrea; and Jans, Aldo, 4,800,403, Cl. 346-140.00R.

Jansen, Martin B. Bicycle mounted exercising device. 4,799,668, Cl. 272-73.000.

Janz, Peter; and Gottschamel, Georg, to Treibacher Chemische Werke AG. α-Al_2O_3 abrasive material and method of preparing the same. 4,799,938, Cl. 51-293.000.

Japan Atomic Energy Research Institute: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Jaqua, David L., to Vetco Gray Inc. Modular riser tensioner incorporating integral hydraulic cylinder accumulator units. 4,799,827, Cl. 405-195.000.

Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,799,817, Cl. 403-57.000.

Jebens, Robert W., to General Electric Company. Fresnel lens concentrator. 4,799,778, Cl. 350-452.000.

Jeffs, David G., to ECC International Limited. Inorganic fillers coated with latex. 4,800,103, Cl. 427-221.000.

Jendryschik, Jurgen: *See*—
Tonshoff, Hans K.; Grabber, Thomas; Gosebruch, Harald; and Jendryschik, Jurgen, 4,799,472, Cl. 125-11.00R.

Jenkins, Colie L., to Du Pont de Nemours, E. I., and Company. Fixed-bed hydrogen peroxide catalyst. 4,800,075, Cl. 423-588.000.

Jenkins, Richard A., to Moore Business Forms, Inc. Bifolded mailer with insert. 4,799,618, Cl. 229-92.300.

Jenq, Yih-Chyun: *See*—
Crinon, Regis J.; and Jenq, Yih-Chyun, 4,800,443, Cl. 338-280.000.

Jensen, Charles O.: *See*—
Myers, Paul A.; and Jensen, Charles O., 4,799,579, Cl. 192-107.00M.

JGC Corporation: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.

Johanndeiter, Martin H.; and Oldach, Detlef W. K., to U.S. Philips Corporation. Circuit arrangement for a television receiver comprising a video text decoder. 4,800,428, Cl. 358-142.000.

Johner, Heinz, to BBC Brown, Boveri & Company, Limited. Optoelectronic reading pen. 4,800,257, Cl. 235-472.000.

Johnescu, Michael M.: *See*—
Capp, Randolph E.; Johnescu, Michael M.; Laudig, Ronald C.; Michael, George W.; and Smith, Donald L., 4,799,900, Cl. 439-585.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Camera having disconnectible manual controls for film unit removal assembly and a shade assembly. 4,800,405, Cl. 354-86.000.

Johnson, David: *See*—
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.

Johnson, David A.: *See*—
Long, Michael E.; and Johnson, David A., 4,800,399, Cl. 346-76.0PH.

Johnson, Donald A.; and Conklin, Dave, to Coca-Cola Company, The. Data logger for a post-mix beverage dispensing system. 4,800,492, Cl. 364-403.000.

Johnson, Edgar A., to Eaton Corporation. Fast switching frequency synthesizer. 4,800,341, Cl. 331-2.000.

Johnson & Johnson Consumer Products, Inc.: *See*—
Bhat, Gulgunji R.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 4,800,076, Cl. 424-69.000.

Johnson, Lenard W.: *See*—
Johnson, Thomas C.; and Johnson, Lenard W., 4,799,383, Cl. 73-290.00R.

Johnson, Leo D. Ironing board. 4,799,321, Cl. 38-103.000.

Johnson, Ronald F.; and Nicklas, Norman E. Method for implanting retainers and implants in cattle. 4,799,921, Cl. 604-51.000.

Johnson, Thomas C.; and Johnson, Lenard W., to LTJ Enterprises, Inc. Visual indicator. 4,799,383, Cl. 73-290.00R.

Johnson, Walter A.: *See*—
Kemp, Preston B., Jr.; Johnson, Walter A.; and Kopatz, Nelson E., 4,800,064, Cl. 419-36.000.

Johnson, William M. Automatically positioned holder for baby bottles. 4,799,636, Cl. 248-102.000.

Johnston, David E., to George Angus & Company Limited. Face seals with liquid pulsation pumping feature. 4,799,693, Cl. 277-96.100.

Jonas, Rodger H.: *See*—
DiGiovacchino, David J.; Carlson, Richard A.; Jonas, Rodger H.; and Marion, Sheila, 4,800,096, Cl. 426-577.000.

Jones, Marshall G., to General Electric Company. Laser materials processing with a lensless fiber optic output coupler. 4,799,755, Cl. 350-96.180.

Jonker, Gary D.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.

Joseph, Johannes; Bleicher, Maximilian; and Greiner, Walter. Electromagnetic indicator device. 4,800,381, Cl. 340-764.000.

Joy, Edward B., to Logimetrics, Inc. Boresight chamber assembly apparatus. 4,800,387, Cl. 342-165.000.

Ju-Zhen, Wang, to Shanghai Lamp Factory. Backing material for the ultrasonic transducer. 4,800,316, Cl. 310-327.000.

Junghans, Ewald: *See*—
Tittizer, Gabriel; and Junghans, Ewald, 4,799,462, Cl. 123-90.120.

Junker, Wilhelm. Portable traffic marker. 4,799,448, Cl. 116-63.00P.

Justus Technik GmbH Industrie-Anlagen: *See*—
Mallant, Jos P., 4,799,596, Cl. 209-580.000.

Kabushiki Kaisha Kanemitsu: *See*—
Kanemitsu, Masahiro, 4,799,909, Cl. 474-168.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujieda, Yasuhiko; Amano, Itaru; and Kanzawa, Masahide, 4,799,871, Cl. 425-38.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Suzuki, Masaru, 4,800,244, Cl. 200-306.000.

Kabushiki Kaisha Toshiba: *See*—
Iijima, Yasuo, 4,800,520, Cl. 364-900.000.
Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, 4,800,321, Cl. 313-639.000.
Imai, Shin-ichi; and Hosoya, Naoki, 4,800,579, Cl. 377-60.000.
Kakumu, Masakazu; and Asami, Tetsuya, 4,800,176, Cl. 437-193.000.

Kamemoto, Kazuhiro, 4,800,433, Cl. 358-168.000.
Kujirai, Masaji; and Fukuhara, Yoshio, 4,800,581, Cl. 378-143.000.
Matsuoka, Yasuo, 4,800,251, Cl. 219-121.430.
Miyoshi, Motosuke; Okumura, Katsuya; and Ogawa, Shigeru, 4,800,268, Cl. 250-234.000.
Okano, Jun-ichi; and Matsumoto, Kiyohito, 4,800,172, Cl. 437-51.000.
Sato, Fumitaka, 4,800,441, Cl. 358-261.100.
Takahashi, Isao, 4,800,478, Cl. 363-41.000.
Takizawa, Toshimitsu, 4,800,455, Cl. 360-104.000.
Tanimoto, Hiroshi; and Yamada, Hisashi, 4,800,339, Cl. 330-253.000.
Toba, Akira, 4,800,447, Cl. 360-10.300.

Kabushiki-Kaisha Toyo Seisakusho: *See*—
Kimura, Chugo, 4,799,390, Cl. 73-865.600.

Kabushiki-Kaisha Yamau: *See*—
Kawasaki, Masaki; and Mizukami, Kunio, 4,800,184, Cl. 501-140.000.

Kabushiki Kasiha Toshiba: *See*—
Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, 4,800,530, Cl. 365-189.000.

Kadee Metal Products Co.: *See*—
Edwards, Clarence K.; and Edwards, Lawrence D., 4,799,431, Cl. 105-1.500.

Kadish, Ehud. Body rest with means for preventing pressure sores. 4,799,276, Cl. 5-446.000.

Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., to Nalco Chemical Company. Filtration aids for removal of calcium solids from aqueous phosphoric acid. 4,800,071, Cl. 423-321.00R.

Kaetsu, Isao: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Kaga, Mitsuru: *See*—
Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, 4,800,574, Cl. 375-26.000.

Kagiura, Kazuo: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.

Kahn, Frederick J.; Nevis, Elizabeth A.; and Leff, Jerry, to Greyhawk Systems, Inc. Liquid crystal cell for image projections and method of operating same. 4,799,770, Cl. 350-331.00R.

Kaise, Hiroshi: *See*—
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, 4,800,013, Cl. 208-19.000.

Kajihara, Takehiro; Atsumi, Senji; and Izumiya, Hirotsugu, to NGK Insulators, Ltd. Discharge tube for a high pressure metal vapor discharge lamp and a method of manufacturing the same. 4,800,320, Cl. 313-625.000.

Kajima Corporation: *See*—
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, 4,799,339, Cl. 52-1.000.

Kajimura, Takashi: *See*—
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, 4,800,565, Cl. 372-45.000.

Kajita, Toshio: *See*—
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.

Kakeno, Sadao: *See*—
Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, 4,800,398, Cl. 346-75.000.

Kakumu, Masakazu; and Asami, Tetsuya, to Kabushiki Kaisha Toshiba. Method for forming contact portion in semiconductor integrated circuit devices. 4,800,176, Cl. 437-193.000.

Kakuta, Tatsuya; and Akasaka, Nobuhiro, to Sumitomo Electric Industries, Ltd. Resin composite. 4,799,762, Cl. 350-96.340.

Kamagata, Shuichi: *See*—
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, 4,799,339, Cl. 52-1.000.

Kamaya Kagaku Kogyo Co., Ltd.: *See*—
Tahara, Tomio, 4,799,503, Cl. 220-260.000.

Kamemoto, Kazuhiro, to Kabushiki Kaisha Toshiba. Progressive scanning conversion system for television image display apparatus. 4,800,433, Cl. 358-168.000.

Kamiya, Akihiro: *See*—
Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, 4,800,321, Cl. 313-639.000.

Kamph, Bengt: *See*—
Andersson, Lars; and Kamph, Bengt, 4,799,570, Cl. 180-275.000.

Kanai, Masahiro; Hanna, Junichi; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Process for preparing Si or Ge epitaxial film using fluorine oxidant. 4,800,173, Cl. 37-081.000.

Kanamaru, Hitoshi, to Pioneer Electronic Corporation. Video disk recorded with video and digital data and recording/reproducing apparatus therefor. 4,800,446, Cl. 358-343.000.

Kanayama, Hiroo: *See*—
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, 4,799,339, Cl. 52-1.000.

Kanbe, Junichiro: *See*—
Okada, Shinjiro; and Kanbe, Junichiro, 4,800,382, Cl. 340-784.000.

Kanda, Masao, to Pioneer Electronic Corporation. Videodisk player. 4,800,445, Cl. 358-342.000.

Kandler, Joachim: *See*—
Hausdorf, Jorg; Kandler, Joachim; and Siekermann, Volker, 4,799,967, Cl. 134-38.000.

Kaneko, Kiyotaka; Oda, Kazuya; Takahashi, Kimihide; and Miyake, Izumi, to Fuji Photo Film Co. Ltd. Image recording/reproducing apparatus. 4,800,448, Cl. 360-35.100.

Kaneko, Masato; Nagakawa, Hiroshi; and Yamashita, Kenichi, to Idemitsu Kosan Company Limited. Refrigerator oil composition. 4,800,030, Cl. 252-32.500.

Kanemitsu, Masahiro, to Kabushiki Kaisha Kanemitsu. Sheet metal poly-V pulley and manufacturing method thereof. 4,799,909, Cl. 474-168.000.

Kano, Hiromi: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.

Kano, Nobuhiko; Aoyama, Akira; and Kunida, Shinobu, to Seiko Epson Corporation. Optical recording medium. 4,800,112, Cl. 428-163.000.

Kanzawa, Masahide: *See*—
Fujieda, Yasuhiko; Amano, Itaru; and Kanzawa, Masahide, 4,799,871, Cl. 425-38.000.

Kao Corporation: *See*—
Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, 4,800,034, Cl. 252-56.00S.

Karbowski, Robert J.; Erickson, Anita S.; Gartner, Charles D.; and Roy, Kathleen A., to Dow Chemical Company, The. Sustained release microbiological control composition. 4,800,082, Cl. 424-409.000.

Karl Lautenschlager GmbH & Co., KG: *See*—
Lautenschlager, Horst, 4,799,802, Cl. 384-19.000.

Karl Lautenschlager GmbH & Co. KG Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl, Jr., 4,799,290, Cl. 16-237.000.

Karlsson, Bertil; and Berthagen, Leif, to Alfa-Laval Thermal AB. Corrosion protection for heat exchangers. 4,800,007, Cl. 204-196.000.

Karube, Norio, to Fanuc Ltd. High-frequency-discharge excited gas laser. 4,800,567, Cl. 372-87.000.

Kasa, Keiji: *See*—
Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, 4,799,708, Cl. 280-796.000.

Kasama, Nobuhiro: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.

Kaschig, Jurgen, to Ciba-Geigy Corporation. Optically active styrene derivatives, polymers obtained from these, complexes with iridium(I) and their use. 4,800,224, Cl. 546-12.000.

Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Child's safety seat for use in automobiles. 4,799,736, Cl. 297-440.000.

Kataoka, Mutsuo; and Tokunaga, Atuto, to Toray Industries, Inc. Radiation-sensitive positive resist comprising a fluorine-containing alpha-chloroacetate copolymer in the specification. 4,800,151, Cl. 430-270.000.

Kato, Juri, to Seiko Epson Corporation. Improved semiconductor device having a polycrystalline isolation region. 4,800,417, Cl. 357-59.000.

Katoh, Kazunobu, to Fuji Photo Film Co., Ltd. Super-high contrast negative type photographic material. 4,800,150, Cl. 430-264.000.

Kaufman, Richard; and Wesolowski, Alex, to Hoffmann-La Roche Inc. Two reagent system for the colorimetric determination of chloride ions in body fluids. 4,800,168, Cl. 436-124.000.

Kaulins, Edward: *See*—
Wuthrich, Paul; and Kaulins, Edward, 4,800,545, Cl. 368-190.000.

Kawahashi, Akira: *See*—
Demura, Hiroshi; Kawahashi, Akira; Hayashi, Kazumi; and Kokubu, Sadao, 4,799,769, Cl. 350-331.00R.

Kawajiri, Junichi, to Bridgestone Corporation. Pneumatic radial tire for motocross. 4,799,523, Cl. 152-535.000.

Kawakami, Kinya: *See*—
Toriwaki, Masao; Kawakami, Kinya; and Ishino, Tomoaki, 4,799,284, Cl. 15-230.120.

Kawakami, Takamasa: *See*—
Izaki, Kansei; Kawakami, Takamasa; Hakkei, Kouichi; and Ando, Kazuhiro, 4,800,182, Cl. 501-92.000.

Kawano, Toshihiro: *See*—
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, 4,800,565, Cl. 372-45.000.

Kawasaki, Masaki; and Mizukami, Kunio, to Kabushiki-Kaisha Yamau; and Onoda Cement Company Limited. Method for producing sulfur plates. 4,800,184, Cl. 501-140.000.

Kawasaki Steel Corp.: *See*—
Fujii, Kazuo, 4,800,004, Cl. 204-28.000.

Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, to Howa Machinery, Ltd. Method for piecing rovings and exchange roving bobbins in a ring spinning frame and working machine for carrying out this method. 4,799,353, Cl. 57-281.000.

Kay, Robert L.: *See*—
LaBudde, Edward V.; and Kay, Robert L., 4,799,429, Cl. 102-393.000.

Kazami, Takeshi: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.

KDI American Products, Inc.: *See*—
Malek, Jack H.; and Markley, Stephen A., 4,800,046, Cl. 261-50.300.

Keates, Richard H.; and Schneider, Richard T. Cornea contour mapping. 4,799,785, Cl. 351-212.000.

Keck, Donald B.; Lyons, Donald R.; and Nolan, Daniel A., to Corning Glass Works. Method of making low loss fiber optic coupler. 4,799,949, Cl. 65-3.120.

Keel, Beat G.: *See*—
Schwarz, Edward L.; and Keel, Beat G., 4,800,454, Cl. 360-103.000.

Kehoe, Gary S.: *See*—
Carroll, Thomas J.; and Kehoe, Gary S., 4,800,095, Cl. 426-548.000.

Keizo Shida: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Kellman, George A.; Flower, Richard E.; and Kidder, Harvey L., to Eastman Kodak Company. Live fire target system. 4,799,688, Cl. 273-371.000.

Kellough, Dorothy. Baby recreational floating device. 4,799,910, Cl. 441-131.000.

Kembo B.V.: *See*—
Meyer, Just B., 4,799,735, Cl. 297-440.000.

Kemp, Preston B., Jr.; Johnson, Walter A.; and Kopatz, Nelson E., to GTE Products Corporation. Process for producing tungsten heavy alloy sheet using hydrometallurgically produced tungsten heavy alloy. 4,800,064, Cl. 419-36.000.

Kemp, William W.: *See*—
Sturgis, David H.; and Kemp, William W., 4,799,530, Cl. 164-5.000.

Kenjyo, Tadao, to Muroran Institute of Technology. Method of producing hydrogen electrode and use thereof in fuel cells. 4,800,139, Cl. 429-42.000.

Kenny, Patrick M. Method and apparatus for removing submerged platforms. 4,799,829, Cl. 405-195.000.

Kent, John D.: *See*—
Craig, Philip A.; Haelsig, Richard T.; Kent, John D.; and Schmoker, Duane S., 4,800,062, Cl. 376-272.000.

Kent Scientific: *See*—
Collier, Richard J., 4,799,498, Cl. 128-774.000.

Keramchemie GmbH: *See*—
Schacht, Eckhard; Velte, Dieter; Werner, Wolfgang; and Wolf, Albert, 4,800,128, Cl. 421-448.000.

Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., to International Business Machines Corporation. Method of self-aligning a trench isolation structure to an implanted well region. 4,799,990, Cl. 156-636.000.

Keshlear, William M.: *See*—
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.

Kesling, Peter C., to TP Orthodontics, Inc. Edgewise bracket. 4,799,882, Cl. 433-8.000.

Kessels, Henricus M. M.; and Velzel, Christiaan H. F., to U.S. Philips Corporation. Optical record carrier scanning apparatus with scanning beam focus error detection. 4,800,547, Cl. 369-45.000.

Kiblinger, Elliott C., II: *See*—
Bruchez, Raymond J., Jr.; Eichhorn, Gunther; and Kiblinger, Elliott C., II, 4,799,623, Cl. 239-265.410.

Kidder, Harvey L.: *See*—
Kellman, George A.; Flower, Richard E.; and Kidder, Harvey L., 4,799,688, Cl. 273-371.000.

Kido, Kunio: *See*—
Tanaka, Shinsaku; and Kido, Kunio, 4,800,451, Cl. 360-74.200.

Kiger, Virginia S.: *See*—
Savas, Peter G.; Kiger, Virginia S.; and Boudreau, Ronald R., 4,800,020, Cl. 210-359.000.

Kihira, Hiroshi: *See*—
Oka, Tomoki; Kihira, Hiroshi; Matsuoka, Kazumi; and Ito, Satoshi, 4,800,165, Cl. 436-6.000.

Kikuchi, Kazuo: *See*—
Suzuki, Motoyuki; and Kikuchi, Kazuo, 4,800,444, Cl. 358-294.000.

Kikuchi, Nobuaki; Fukuyama, Hirohisa; Hirabayashi, Tamio; and Imai, Kouichi, to Imai, Kouichi; and Matsushita Electric Works, Limited. Kitchen unit for physically handicapped persons. 4,799,743, Cl. 312-228.000.

Kilbane, Farrell M.; Coleman, Richard A.; Dunbar, Frank C.; and Gibson, Alan F., to Armco Inc. Hot dip aluminum coated chromium alloy steel. 4,800,135, Cl. 428-653.000.

Kimizawa, Toshihide, to Nifco Inc. Pivot bush. 4,799,288, Cl. 16-2.000.

Kimura, Chugo, to Kabushiki-Kaisha Toyo Seisakusho. Snow-weathering test apparatus for self-propelled vehicle. 4,799,390, Cl. 73-865.600.

Kimura, Hiroshi: *See*—
Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, 4,800,160, Cl. 435-177.000.

Kimura, Hiroyuki: *See*—
Sugai, Yoshiro; and Kimura, Hiroyuki, 4,800,434, Cl. 358-190.000.

Kimura, Kikuo: *See*—
Ogawa, Kikuo; and Kimura, Kikuo, 4,799,893, Cl. 439-76.000.

Kimura, Sigeyuki: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.

Kimura, Yasuko: *See*—
Osawa, Yasuhisa; and Kimura, Yasuko, 4,800,243, Cl. 200-514.000.

King, Patrick D., to Flo-Con Systems, Inc. Injection valve components and method. 4,799,649, Cl. 266-45.000.

Kingsford, Kenji A., to Mace Corporation. Torque lock fitting arrangement. 4,799,717, Cl. 285-341.000.

Kini, M. Vittal: *See*—
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.

Kinnersley, Alan M.: *See*—
Danzig, Morris J.; and Kinnersley, Alan M., 4,799,953, Cl. 71-98.000.

Kinoshita, Humiaki, to Murata Manufacturing Co., Ltd. DC cutting circuit. 4,800,343, Cl. 333-24.00C.

Kinsky, Ivan. Vehicle land navigating device. 4,800,501, Cl. 364-453.000.

Kirsche, Horst: *See*—
Held, Manfred; and Kirsche, Horst, 4,799,427, Cl. 102-215.000.

Kis-Tamas, Laszlo : *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.

Kiss, Charles R.; and Huang, Shu-Jen W., to Nalco Chemical Company. Paint detackification. 4,800,217, Cl. 525-163.000.

Kitagawa, Masatoshi: *See*—
Ishihara, Shinichiro; Kitagawa, Masatoshi; and Hirao, Takashi, 4,800,174, Cl. 437-101.000.

Kitajima, Akira: *See*—
Akiba, Kouji; Kitajima, Akira; and Arai, Yoshio, 4,800,285, Cl. 250-554.000.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Automatic tool changer. 4,799,308, Cl. 29-568.000.

Kitamura Machinery Co., Ltd.: *See*—
Kitamura, Koichiro, 4,799,308, Cl. 29-568.000.

Kitanishi, Ryoji, to Tandy Electronics Japan, Ltd. Index device for automatic information retrieval. 4,800,584, Cl. 379-355.000.

Kiyama, Nobuo: *See*—
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.

Klee, Helmut; Haas, Hans; Kowalski, Werner; and Dahmen, Theo, to Hoechst Aktiengesellschaft. Process for making a granular product containing sodium triphosphate. 4,800,055, Cl. 264-118.000.

Kleemann, Axel: *See*—
Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, 4,800,044, Cl. 260-399.000.

Klein, Igal: *See*—
Grunwald, John J.; Klein, Igal; and Whitmore, Bryan, 4,800,132, Cl. 428-560.000.

Klein, Joseph T.: *See*—
Hamer, R. Russell; Effland, Richard C.; and Klein, Joseph T., 4,800,203, Cl. 514-248.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.

Kleineberg, Wolfgang: *See*—
Wawra, Helmut; Scheurenbrand, Dieter; and Kleineberg, Wolfgang, 4,799,509, Cl. 137-587.000.

Kleiner, Lothar; and Matthiesen, Martin, to Raychem Corporation. Electrical devices containing conductive polymers. 4,800,253, Cl. 219-553.000.

Klem, Robert E.: *See*—
Harvey, Richard D.; and Klem, Robert E., 4,799,964, Cl. 106-436.000.

Kleschick, William A.: *See*—
Pearson, Norman R.; Bartley, Shannon L.; and Kleschick, William A., 4,799,952, Cl. 71-92.000.

Klevnjans, Joseph P. H., to Eriks Holding N.V. Combined dock seal and shelter. 4,799,342, Cl. 52-173.0DS.

Klingenstein, Walter: *See*—
Fink, Roland; and Klingenstein, Walter, 4,799,624, Cl. 239-412.000.

Klintenstedt, Kjell; and Lantz, Christer, to Alfa-Laval Separation AB. Method of sensing and indicating errors in a dosing circuit. 4,800,367, Cl. 340-526.000.

Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, to BBC Brown Boveri AG. Static converter circuit and method for controlling it. 4,800,481, Cl. 363-70.000.

Knapp, Dorcel W.: *See*—
Hartsuiker, Hendrik; and Knapp, Dorcel W., 4,799,584, Cl. 198-709.000.

Knapp, Peter: *See*—
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, 4,800,481, Cl. 363-70.000.

Knauer, Allen R. Method for restoring and maintaining metal markers. 4,800,101, Cl. 427-142.000.

Kneifel, R. W., II: *See*—
Stone, Kirby L.; Kneifel, R. W., II; and Brockman, John P., 4,799,981, Cl. 156-64.000.

Knoch, Martin; Reul, Helmut; and Rau, Gunter, to B. Braun Melsungen AG. Cardiac valve prosthesis. 4,799,930, Cl. 623-2.000.

Knodler, Reinhard: *See*—
Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, 4,800,143, Cl. 429-153.000.

Knoedler, Roy E.; Morton, Kenneth P.; and Schroer, Charles E., to Cosco, Inc. Collapsible walker. 4,799,700, Cl. 280-87.051.

Knopf, Ulrich C.; and Sieber, Joseph, to Agrogen Stiftung. Apparatus for cooling and deep freezing samples of biological material enclosed in vessels. 4,799,358, Cl. 62-3.000.

Knowles, Charlene G. Catamenial appliance. 4,799,929, Cl. 604-331.000.

Kobayashi, Akira: *See*—
Inagaki, Shintaro; and Kobayashi, Akira, 4,800,288, Cl. 250-578.000.

Kobayashi, Hisao; and Mochizuki, Kousuke, to Aderans Co., Ltd. Wig. 4,799,502, Cl. 132-53.000.
Kobayashi, Yukoh. Portable mailing scale. 4,799,560, Cl. 177-148.000.
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, to Kajima Corporation. Method of controlling building against earthquake. 4,799,339, Cl. 52-1.000.
Koburger, Charles W., III: *See*—
Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., 4,799,990, Cl. 156-636.000.
Koch, Werner: *See*—
Schuierer, Manfred; and Koch, Werner, 4,799,367, Cl. 68-13.00R.
Koerts, Kees: *See*—
Bakker, Age; Schepers, Genesius J. J. M.; and Koerts, Kees, 4,799,965, Cl. 127-46.200.
Kohsaka, Yohji: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.
Koike, Eishi, to Ozen Corporation. Pull string mechanism in a pull string type sound reproducing device. 4,800,305, Cl. 369-67.000.
Koishi, Kenji; and Matsuo, Tamotsu, to Matsushita Electric Industrial Co., Ltd. Optical recording and reproducing apparatus with abnormality detector. 4,800,548, Cl. 369-54.000.
Koiso, Takashi; and Fujii, Satoshi, to Sumitomo Electric Industries, Ltd. Surface treatment method for improving corrosion resistance of ferrous sintered parts. 4,799,970, Cl. 148-6.200.
Kojima, Masaaki: *See*—
Mikami, Tsutomu; and Kojima, Masaaki, 4,800,336, Cl. 324-426.000.
Kokubo, Kakuro: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.
Kokubu, Sadao: *See*—
Demura, Hiroshi; Kawahashi, Akira; Hayashi, Kazumi; and Kokubu, Sadao, 4,799,769, Cl. 350-331.00R.
Kolar, Richard A., to Surface Technologies, Inc. Resilient, wear-and weather-resistant composite surface material. 4,800,119, Cl. 428-283.000.
Koller, Josef: *See*—
Beffa, Fabio; and Koller, Josef, 4,799,933, Cl. 8-404.000.
Komatsu, Teruo: *See*—
Sato, Hideki; Komatsu, Teruo; and Sugiura, Yoshinori, 4,800,401, Cl. 346-108.000.
Komatsubara, Takeo: *See*—
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, 4,800,013, Cl. 208-19.000.
Komoto, Akira, to Shimadzu Corporation. Electronic balance. 4,799,561, Cl. 177-229.000.
Kone Elevator GmbH: *See*—
Kulju, Hannu; and Varri, Alpo O., 4,800,386, Cl. 342-61.000.
Konishi, Katsutoshi: *See*—
Ueda, Hideaki; Yuge, Shizuo; and Konishi, Katsutoshi, 4,800,144, Cl. 430-58.000.
Konishi, Tomoo, to Tektronix, Inc.; and Sony-Tektronix, Inc. Timing jitter measurement display. 4,800,571, Cl. 375-10.000.
Konno, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Valve operating mechanism for internal combustion engines. 4,799,463, Cl. 123-90.170.
Konuma, Toshimitsu: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Koori, Yasuo; and Mitsui, Tsutomu, to Aisin Seiki Kabushiki Kaisha. Clutch pressure control apparatus. 4,800,497, Cl. 364-424.100.
Kopatz, Nelson E.: *See*—
Kemp, Preston B., Jr.; Johnson, Walter A.; and Kopatz, Nelson E., 4,800,064, Cl. 419-36.000.
Korber AG: *See*—
Liebe, Reinhard; and Wochnowski, Waldemar, 4,799,501, Cl. 131-299.000.
Koreski, Martin J. Anchor device for holding hoses against retracting slidable movement. 4,799,641, Cl. 248-68.100.
Korshunova, Nadezhda K.: *See*—
Fedorov, Svyatoslav N.; Krutov, Sergei V.; Soloviev, Sergei A.; Alexandrova, Olga G.; and Korshunova, Nadezhda K., 4,799,478, Cl. 128-303.100.
Kosaka, Akihiko, to Araya Industrial Co., Ltd. Method for assembling a wheel for a bicycle. 4,799,304, Cl. 29-159.020.
Koseki, Takashi: *See*—
Shimai, Shunzo; Saito, Yoshio; Ando, Yawara; and Koseki, Takashi, 4,799,601, Cl. 220-21.00R.
Koshinaka, Osamu; and Suzuki, Yoshikazu, to Maruzen Sewing Machine Co., Ltd. Double purpose looper for overlocking sewing machine. 4,799,439, Cl. 112-162.000.
Koshinaka, Osamu; Suzuki, Yoshikazu; and Yoneda, Yoshihide, to Maruzen Sewing Machine Co., Ltd. Looper changeover device. 4,799,440, Cl. 112-162.000.
Koshizuka, Atuo; and Furumochi, Kazuto, to Fujitsu Limited. Semiconductor memory device with reset signal generating circuit. 4,800,552, Cl. 365-190.000.
Kotthaus, Erich; Ginier, Ami; and Hildinger, Otto, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method of grinding the teeth of bevel gears having longitudinally curved teeth. 4,799,337, Cl. 51-287.000.
Kotyuk, Kenneth A.: *See*—
Ferchau, Joerg U.; and Kotyuk, Kenneth A., 4,800,463, Cl. 361-424.000.
Kouno, Shinichi: *See*—
Fujioka, Yoshiki; and Kouno, Shinichi, 4,800,327, Cl. 318-798.000.
Kowalski, Werner: *See*—
Klee, Helmut; Haas, Hans; Kowalski, Werner; and Dahmen, Theo, 4,800,055, Cl. 264-118.000.
Kowcz, Alexandra; and Doughty, Darrell G., to Richardson-Vicks Inc. Anti-acne composition. 4,800,197, Cl. 514-162.000.
Koyama, Takeshi: *See*—
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.
Koyanagi, Kaoru: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg I.; and Sizova, Svetlana I. Cogged belt with reinforcing members. 4,799,919, Cl. 474-205.000.
Kraff, Manus C. Suturing needle with tail mounted cutting blade and method for using same. 4,799,483, Cl. 128-339.000.
Kramer, Bernhard, to Dornier GmbH. Radial attenuation. 4,799,653, Cl. 267-136.000.
Kramer, Kenneth D.; and Sparks, Gregory E., to Deere & Company. Pilot operated hydraulic control valve. 4,799,645, Cl. 251-30.040.
Krapf, Rudolf: *See*—
Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, 4,800,143, Cl. 429-153.000.
Krause, Bernd, to Linde Aktiengesellschaft. Multi-cylinder hydraulic piston device, a cylinder therefor, and its method of making. 4,799,419, Cl. 91-499.000.
Krauss, Owen T.; and Gruber, Norman G., to Western Atlas International, Inc. Tandem sampler actuation device. 4,799,389, Cl. 73-863.310.
Kreider, Hans; and Mueller, Manfred, to Emhart Enterprises Corp. Weld stud. 4,799,842, Cl. 411-171.000.
Krishnaswamy, Prem; and Hoyack, Mark E., to Dorr-Oliver Incorporated. Flotation mechanism. 4,800,017, Cl. 210-219.000.
Krone GmbH: *See*—
Weber, Jens, 4,800,557, Cl. 370-3.000.
Kroniger, Wilhelm, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Hydraulically controlled disk brake with serial fluid flow. 4,799,575, Cl. 188-71.600.
Kronseder, Hermann. Magazine assembly for labels or the like in a labeling machine. 4,799,605, Cl. 221-11.000.
Krsmanovic, Kosta: *See*—
Despic, Aleksandar; and Krsmanovic, Kosta, 4,800,009, Cl. 204-225.000.
Krueger, Hans; and Good, Hans P., to Siemens Aktiengesellschaft & Balzers Aktiengesellschaft. Gas laser with a frequency-selective dielectric layer system. 4,800,568, Cl. 372-99.000.
Krutov, Sergei V.: *See*—
Fedorov, Svyatoslav N.; Krutov, Sergei V.; Soloviev, Sergei A.; Alexandrova, Olga G.; and Korshunova, Nadezhda K., 4,799,478, Cl. 128-303.100.
Kryder, Mark; Cain, William C.; and Meiklejohn, William H., to Carnegie-Mellon University. Magnetoresistive sensor element. 4,800,457, Cl. 360-113.000.
Kubisiak, Michael P.: *See*—
Bertram, James L.; Myles, Willie L.; and Kubisiak, Michael P., 4,800,215, Cl. 523-414.000.
Kubo, Haruaki; Umeda, Mitsuru; and Iwakoshi, Hiromitsu, to Daishowa Seiki Co., Ltd.; and Mitsubishi Jukogyo Kabushiki Kaisha. Milling cutter. 4,799,838, Cl. 409-234.000.
Kugimiya, Shuzo: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.
Kuhl, Lynn. Vacuum cleaner for pets. 4,799,460, Cl. 119-85.000.
Kujawa, Harry F.; and Hinderer, Nelson A., to Oteco Equipment Company. Protector for pipe connector hubs. 4,799,716, Cl. 285-334.200.
Kujirai, Masaji; and Fukuhara, Yoshio, to Kabushiki Kaisha Toshiba. X-ray tube. 4,800,581, Cl. 378-143.000.
Kulju, Hannu; and Varri, Alpo O., to Kone Elevator GmbH. Method of and apparatus for counting objects. 4,800,386, Cl. 342-61.000.
Kulzer & Co. GmbH: *See*—
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.
Kumai, Fumitaka; and Takano, Yoshihiro, to Tekken Construction Co., Ltd. Method of making covering wall of tunnel made by shield type excavator. 4,799,824, Cl. 405-146.000.
Kumasaka, Taiichi; Hirano, Yasuyuki; Ozaki, Katsuhiko; and Sawada, Koichi, to Hitachi Koki Company, Ltd. Guard-moving system in a cutting apparatus. 4,799,416, Cl. 83-397.000.
Kummerfeldt, Georg: *See*—
Schwerzel, Wolfgang; and Kummerfeldt, Georg, 4,800,425, Cl. 358-136.000.
Kunida, Shinobu: *See*—
Kano, Nobuhiko; Aoyama, Akira; and Kunida, Shinobu, 4,800,112, Cl. 428-163.000.

Kuno, Akira: *See*—
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.
Kupferschmidt, Albert, to Northern Telecom Limited. Telephone line protector with line disconnect and an entrance terminal assembly incorporating a plurality of protectors. 4,800,587, Cl. 379-437.000.
Kuramoto, Megumi: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.
Kurano, Akira: *See*—
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, 4,800,483, Cl. 364-200.000.
Kurashima, Hideo: *See*—
Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, 4,800,250, Cl. 219-121.630.
Kuribayashi, Hiroshi: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.
Kurihara, Masaki: *See*—
Futamura, Shoji; and Kurihara, Masaki, 4,800,248, Cl. 219-69.00S.
Kurihara, Takashi: *See*—
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, 4,800,013, Cl. 208-19.000.
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for machining the side edge surface of a web plate. 4,799,836, Cl. 409-138.000.
Kuroda, Shigenori: *See*—
Takechi, Moriaki; Watanabe, Tsugio; and Kuroda, Shigenori, 4,800,355, Cl. 335-301.000.
Kuroiwa, Kazuo. Rolling bearing with rolling retainers. 4,799,807, Cl. 384-462.000.
Kuroiwa, Kazuo. Rolling bearing with rolling retainer members. 4,799,809, Cl. 384-522.000.
Kurokawa, Hidefumi, to NEC Corporation. Digital image signal coding/decoding circuit with buffer memory storing reference line as compression codes. 4,800,440, Cl. 358-260.000.
Kurokawa, Hitoshi: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.
Kuromitsu, Hiromu: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, to JGC Corporation. Radioactive waste water treatment. 4,800,042, Cl. 252-628.000.
Kusaka, Iwao: *See*—
Shigenaka, Toshinori; and Kusaka, Iwao, 4,799,461, Cl. 122-7.00R.
Kusumoto, Yoshiro: *See*—
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.
Kuttner, Ralph, to Steel Casting Engineering, Ltd. Brush motor amplifier with overspeed protection. 4,800,324, Cl. 318-293.000.
Kutzli, Carl R.; and Rutter, James D., to Agnew Machine Company. Workpiece support for automated tooling. 4,799,586, Cl. 198-803.010.
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, to Shizuoka Seiki Co., Ltd. Electrolytic finishing system and method. 4,800,006, Cl. 204-129.430.
Kyoya, Michio: *See*—
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.
L.B.P. Partnership C.P.I. Corporation, The: *See*—
Cruickshank, John S., 4,800,104, Cl. 427-230.000.
La Telemecanique Electrique: *See*—
Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , 4,800,352, Cl. 335-132.000.
Labate, Michael D. Slag retaining device with vortex inhibitor. 4,799,650, Cl. 266-227.000.
LaBudde, Edward V.; and Kay, Robert L., to ISC Technologies, Inc. Programming circuit for individual bomblets in a cluster bomb. 4,799,429, Cl. 102-393.000.
Lachman, Irwin M.; and Patil, Mallanagouda D., to Corning Glass Works. Method of crystallizing a zeolite on the surface of a monolithic ceramic substrate. 4,800,187, Cl. 502-64.000.
Laeuppi, Heinrich; and Fedrizzi, Bruno, to Erhard Thoma. Road-building machine. 4,799,820, Cl. 404-100.000.
Lahti, Daniel J.; and Younghans, James L., to General Electric Company. Laminar flow necelle. 4,799,633, Cl. 244-130.000.
Lake, Frank B.: *See*—
Marshall, Claire B.; Lake, Frank B.; and Bushey, Roger A., 4,800,131, Cl. 428-558.000.
Lake, Ralph, to Unisys Corporation. Method of mounting a printed circuit board. 4,799,314, Cl. 29-846.000.
Lake, Ralph J., Jr.; Wiley, Franklyn L.; Coby, A. Daniel; and Pluth, John, Jr., to CALCOMP Inc. Plotter paper sizing system. 4,800,402, Cl. 346-139.00R.
Lake Region Manufacturing Company, Inc.: *See*—
Hargreaves, Thomas E.; and Hanson, Donald W., 4,799,496, Cl. 128-772.000.
Lakin, Bryan L., to Fasco Industries, Inc. Self-aligning bearing and oil cap mount for an electric motor. 4,800,309, Cl. 310-90.000.
Lally, Richard W., to PCB Piezotronics, Inc. Instrumented test hammer. 4,799,375, Cl. 73-12.000.
La Marre, Thomas M.; and Martin, Cynthia H., to Nalco Chemical Company. Synergistic biocide of 1,5-pentanedial and a mixture of N-alkyl dimethyl benzyl ammonium chloride and N-dialkyl methyl benzyl ammonium chloride. 4,800,235, Cl. 514-643.000.
Landwehr, Oswald: *See*—
Wintermantel, Erich; and Landwehr, Oswald, 4,799,822, Cl. 405-46.000.
Lang, Billy J., II: *See*—
Mathew, Ranjan J.; and Lang, Billy J., II, 4,800,178, Cl. 437-206.000.
Lang, Richard J.: *See*—
Edward, Brian J.; Lang, Richard J.; and Rees, Daniel E., 4,800,393, Cl. 343-821.000.
Langenbeck, Sharon L.; and Hildeman, Gregory J., to Lockheed Corporation. Aluminum alloy. 4,799,978, Cl. 148-437.000.
Lankl, Berthold: *See*—
Nossek, Josef A.; Sebald, Georg; Lankl, Berthold; and Boshold, Klaus, 4,800,572, Cl. 375-14.000.
Lantz, Andre ; and Michaud, Pascal, to Societe ATOCHEM. Synthesis of 1,1,2,2-tetrahydroperfluoroalkanols and their esters. 4,800,234, Cl. 568-842.000.
Lantz, Christer: *See*—
Klintenstedt, Kjell; and Lantz, Christer, 4,800,367, Cl. 340-526.000.
Lanza, Thomas J., Jr.: *See*—
Tischler, Allan N.; Durette, Philippe L.; Witzel, Bruce E.; and Lanza, Thomas J., Jr., 4,800,211, Cl. 514-443.000.
Lara, Pedro F., to Atlantic Richfield Company. Method for surveying fluid transmission pipelines. 4,799,391, Cl. 73-865.800.
Larnerd, James M.: *See*—
Simpson, John P.; Newman, Gary L.; Larnerd, James M.; and Emerick, Alan J., 4,799,616, Cl. 228-125.000.
Lasagna, Diego; and Mandara, Francesco P., to Marelli Autronica S.p.A. Electronic system for controlling the ignition of an internal combustion engine, particularly for motor vehicles. 4,799,471, Cl. 123-644.000.
Laskaris, Evangelos T., to General Electric Company. Superconducting magnetic resonance magnet and method of making same. 4,800,354, Cl. 335-216.000.
Lasky, Jerome B.: *See*—
Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., 4,799,990, Cl. 156-636.000.
Laspeyres, Marc, to Solaronics Vaneecke. Radiant burners with a ceramic frame. 4,799,879, Cl. 431-328.000.
Lassiter, Perry B.; and Rea, Larry B., to Combustion Engineering, Inc. Silicon carbide refractory composition. 4,800,181, Cl. 501-89.000.
Lau, Wan F.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lau, Wan F., 4,800,198, Cl. 514-167.000.
Laudig, Ronald C.; and Smith, Donald L., to AMP Incorporated. Triaxial electrical cable connector. 4,799,902, Cl. 439-585.000.
Laudig, Ronald C.: *See*—
Capp, Randolph E.; Johnescu, Michael M.; Laudig, Ronald C.; Michael, George W.; and Smith, Donald L., 4,799,900, Cl. 439-585.000.
Laufer, Helmut, to Deutsche Thomson-Brandt GmbH. Device for recording information on and playing it back from a driven recording medium. 4,800,553, Cl. 369-263.000.
Lauraire, Michel: *See*—
Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , 4,800,352, Cl. 335-132.000.
Laurent, Bernard: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.
Lautenschlager, Horst, to Karl Lautenschlager GmbH & Co., KG. Drawer guide. 4,799,802, Cl. 384-19.000.
Lautenschlager, Karl, Jr., to Karl Lautenschlager GmbH & Co. KG Mobelbeschlagfabrik. Cabinet hinge. 4,799,290, Cl. 16-237.000.
Lawrence, Jack, to Unilever Patent Holdings B.V. Packaging construction. 4,799,593, Cl. 206-585.000.
Laxo, Darryl E., to Chevron Research Company. Automatic, gravity-powered closure device. 4,799,331, Cl. 49-31.000.
Lazcano-Navarro, Arturo; Alcantara, Miguel A.; and Hernandez-Ruiz, Jose E. Device for introducing separated fluids through independent flow paths through bottom tuyeres in a rotating metallurgical converter. 4,799,651, Cl. 166-268.000.
Lechon, Alain; and Le Luel, Yves, to Societe Nationale Elf Aquitaine (Production). Connection device for a guide line of an undersea installation. 4,799,816, Cl. 403-2.000.
Lee, Chan H.: *See*—
Albrecht, Thomas; and Lee, Chan H., 4,800,081, Cl. 424-129.000.
Lee, Eon H.; and Chin, Seok W., to Goldstar Co., Ltd. Device for protecting the turntable shaft of microwave ovens from the concentration of microwaves. 4,800,246, Cl. 219-10.55F.
Lee, Fu-Kuei. Motor driven rotary brush. 4,799,280, Cl. 15-29.000.
Lee, H. P. Sherman: *See*—
Si, Stephen S. C.; Lee, H. P. Sherman; and Rawlinson, Stephen J., 4,800,516, Cl. 364-748.000.
Lee, Ki-Seok. Drinking fluids carton. 4,799,619, Cl. 229-125.420.
Lee, Ving J.: *See*—
Babine, Robert; and Lee, Ving J., 4,800,199, Cl. 514-202.000.

Leff, Jerry: *See*—
Kahn, Frederick J.; Nevis, Elizabeth A.; and Leff, Jerry, 4,799,770, Cl. 350-331.00R.
Lehmann, Roger W.; and Satten, Michael I. Radio-controlled robot operator for battery-powered toys. 4,799,915, Cl. 446-279.000.
Le Luel, Yves: *See*—
Lechon, Alain; and Le Luel, Yves, 4,799,816, Cl. 403-2.000.
Lemke, Timothy A., to Du Pont de Nemours, E. I., and Company. Cable having a corrugated septum. 4,800,236, Cl. 174-36.000.
Lemper, Herbert. Modular continuous slab casters and the like. 4,799,535, Cl. 164-416.000.
Lentine, Anthony L., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Tri-state optical device with quantum well absorption. 4,800,262, Cl. 250-211.00J.
Lentz, Andrew O. Oscillating hoop and stick assembly. 4,799,917, Cl. 446-450.000.
Lenz, Kenneth: *See*—
Frommelt, John A.; and Lenz, Kenneth, 4,799,341, Cl. 52-173.0DS.
Leon, Thomas B. Wheel mounted safety light. 4,800,469, Cl. 362-72.000.
Leonard, Ronald J., to Baxter International Inc. Platelet collection system. 4,800,022, Cl. 210-636.000.
Leonardi, Nicholas J., to Dynamit Nobel of America, Inc. Electrically conductive polyethylene foam. 4,800,126, Cl. 428-420.000.
Leone, Stacey: *See*—
Hebert, Gary; and Leone, Stacey, 4,799,447, Cl. 114-362.000.
Lever Brothers Company: *See*—
Mazzola Louis R., 4,800,037, Cl. 252-109.000.
McFadyen, Robert C., 4,799,598, Cl. 215-260.000.
Lewis, David F., to GAF Corporation. Memory element for information storage and retrieval system and associated process. 4,800,526, Cl. 365-118.000.
Lewis, Ralph H. Rebreathing mask. 4,799,477, Cl. 128-206.240.
Libbey-Owens-Ford Co.: *See*—
Enk, Allan T.; and Gerber, Charles H., 4,799,948, Cl. 65-286.000.
Licentia Patent-Verwaltungs-GmbH: *See*—
Schwerzel, Wolfgang; and Kummerfeldt, Georg, 4,800,425, Cl. 358-136.000.
Lichau, James W.; Lichau, Patricia K.; and Hanson, Steven D., to Lichau, James W.; and Lichau, Patricia K. Barrier for utility pole. 4,799,340, Cl. 52-170.000.
Lichau, Patricia K.: *See*—
Lichau, James W.; Lichau, Patricia K.; and Hanson, Steven D., 4,799,340, Cl. 52-170.000.
Liebe, Reinhard; and Wochnowski, Waldemar, to Korber AG. Method and apparatus for making tobacco shreds. 4,799,501, Cl. 131-299.000.
Lied, Thomas: *See*—
Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, 4,800,044, Cl. 260-399.000.
Lievin, Camus: *See*—
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazalet; and Torguet, Roger, 4,799,777, Cl. 350-358.000.
Lifestyle International, Inc.: *See*—
Shick, Lawrence A., 4,799,521, Cl. 150-107.000.
Lim, Mu-Ill; and Anderson, James S., to Clairol Incorporated. Sulfur-containing nitroaminobenzene dyes, process and hair dye compositions. 4,799,934, Cl. 8-414.000.
Lin, Chia-Cheng: *See*—
Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., 4,799,963, Cl. 106-287.130.
Lindae, Gerhard; Loewe, Richard; and Perthus, Peter, to Robert Bosch GmbH. Dimmed headlight, particularly for motor vehicles. 4,800,467, Cl. 362-61.000.
Lindau, Mark S.; and Clay, Howard. Scooter. 4,799,701, Cl. 280-87.041.
Linde Aktiengesellschaft: *See*—
Krause, Bernd, 4,799,419, Cl. 91-499.000.
Lindhard, Gordon: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.
Lindstrom, Richard L. Intracorneal lens. 4,799,931, Cl. 623-5.000.
Linner, John G., to Board of Regents, The University of Texas System. Method for cryopreparing biological tissue for ultrastructural analysis. 4,799,361, Cl. 62-64.000.
Lippert, Raymond E. Brake light attachment. 4,800,471, Cl. 362-80.000.
Lisowski, Walter E., to Helm Products, Inc. Rail clamp. 4,799,444, Cl. 114-221.00R.
Litton Systems, Inc.: *See*—
Carome, Edward F., 4,799,752, Cl. 350-96.150.
Symons, Robert S., 4,800,322, Cl. 315-5.390.
Lo, Eric K.: *See*—
Scheffer, Bruce A.; and Lo, Eric K., 4,799,414, Cl. 83-103.000.
Lockheed Corporation: *See*—
Langenbeck, Sharon L.; and Hildeman, Gregory J., 4,799,978, Cl. 148-437.000.
Loewe, Richard: *See*—
Lindae, Gerhard; Loewe, Richard; and Perthus, Peter, 4,800,467, Cl. 362-61.000.
Lofgren, Peter: *See*—
Arthun, Nils; and Lofgren, Peter, 4,800,023, Cl. 210-644.000.
Logimetrics, Inc.: *See*—
Joy, Edward B., 4,800,387, Cl. 342-165.000.
Lonca, Michel: *See*—
Fourez, Michel; Lonca, Michel; and Pichant, Patrick, 4,799,959, Cl. 106-1.160.
Long, Jon; and Sahakian, V. K., to LSI Logic Corporation. Support assembly for integrated circuits. 4,800,419, Cl. 357-70.000.
Long, Michael E.; and Johnson, David A., to Eastman Kodak Company. Pulsed constant current source for continuous tone resistive ribbon printers. 4,800,399, Cl. 346-76.0PH.
Lonseal Corporation: *See*—
Waki, Tatsuo; Watanabe, Takeshi; and Suzuki, Kazuo, 4,800,214, Cl. 521-84.100.
Loomis, Gary L.: *See*—
Murdoch, Joseph R.; and Loomis, Gary L., 4,800,219, Cl. 525-413.000.
Loos, Herbert: *See*—
Erhardt, Manfred; and Loos, Herbert, 4,799,473, Cl. 125-11.0CD.
Lorenzo, Tina V.: *See*—
Davis, James K.; Craycroft, Robert S.; and Lorenzo, Tina V., 4,799,935, Cl. 8-922.000.
Lorigan, Robert P.: *See*—
Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., 4,799,392, Cl. 73-865.900.
Lorsignol, Jean: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.
Losquadro, Giacinto: *See*—
Perrotta, Giorgio; and Losquadro, Giacinto, 4,800,570, Cl. 375-4.000.
Loucks, L. David: *See*—
Goshorn, Jean; Loucks, L. David; and Loucks, Terry K., 4,799,458, Cl. 119-96.000.
Loucks, Terry K.: *See*—
Goshorn, Jean; Loucks, L. David; and Loucks, Terry K., 4,799,458, Cl. 119-96.000.
Lowenthal, Richard W.; Reeber, Larke E.; Hoffman, Drew S.; and Ramsay, Michael, to Convergent Technologies. Multi-plane page mode video memory controller. 4,800,380, Cl. 340-750.000.
LSI Logic Corporation: *See*—
Long, Jon; and Sahakian, V. K., 4,800,419, Cl. 357-70.000.
LTJ Enterprises, Inc.: *See*—
Johnson, Thomas C.; and Johnson, Lenard W., 4,799,383, Cl. 73-290.00R.
Lubrizol Corporation, The: *See*—
DiBiase, Stephen A.; and Pialet, Joseph W., 4,800,031, Cl. 252-47.500.
Murphy, John P., 4,800,032, Cl. 252-51.50A.
Lucas Industries public limited company: *See*—
Harrison, Anthony W., 4,799,355, Cl. 60-562.000.
Lucius, John H., to Coleman Company, Inc., The. Personal flotation device with inner mesh layer. 4,799,908, Cl. 441-115.000.
Luckanuck, John S., to Radixx/World Ltd. Fire resistant steel door. 4,799,349, Cl. 52-809.000.
Luft, Lee T., to Menasha Corporation. Large capacity shipping pallet assembly. 4,799,433, Cl. 108-51.100.
Lukenbach, Elvin R.: *See*—
Bhat, Gulgunji R.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 4,800,076, Cl. 424-69.000.
Lukonits, Otto : *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.
Lurssen, Klaus: *See*—
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Lutocka, John A., Jr.: *See*—
Jankowiak, Roman; and Lutocka, John A., Jr., 4,799,907, Cl. 441-42.000.
Lynch, Shannon J.: *See*—
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., to Ramtron Corporation. Timepiece communication system. 4,800,543, Cl. 368-10.000.
Lyons, Donald R.: *See*—
Keck, Donald B.; Lyons, Donald R.; and Nolan, Daniel A., 4,799,949, Cl. 65-3.120.
Lysy, Regis: *See*—
Broze, Guy; and Lysy, Regis, 4,800,038, Cl. 252-174.170.
MacDermid, Incorporated: *See*—
Grunwald, John J.; Klein, Igal; and Whitmore, Bryan, 4,800,132, Cl. 428-560.000.
Mace Corporation: *See*—
Kingsford, Kenji A., 4,799,717, Cl. 285-341.000.
Machine Engineering Co., Ltd.: *See*—
Ito, Takeshi, 4,799,396, Cl. 74-410.000.
MacIver, Bernard A.: *See*—
Jain, Kailash C.; and MacIver, Bernard A., 4,800,170, Cl. 437-24.000.
MacMillan Bloedel Limited: *See*—
Brears, John H., 4,800,286, Cl. 250-560.000.
Maetani, Masami: *See*—
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, 4,800,413, Cl. 355-45.000.
Maggioni, Virginio: *See*—
May, Pierluigi; and Maggioni, Virginio, 4,799,742, Cl. 303-115.000.
Magnetic Peripherals Inc.: *See*—
Minuhin, Vadim B.; and Von Deylen, Vernon F., 4,800,295, Cl. 307-273.000.
Schwarz, Edward L.; and Keel, Beat G., 4,800,454, Cl. 360-103.000.

Maguire, John F.: *See*—
Zatko, David A.; and Maguire, John F., 4,800,000, Cl. 204-1.00T.
Magyar Szenhidrogenipari Kutato-Fejleszto Intezet: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Mahaffy, John W., to Continental Group, Inc., The. Twin cup carrier. 4,799,723, Cl. 294-87.200.
Mahn, Dieter: *See*—
Faeser, Ulrich; and Mahn, Dieter, 4,799,866, Cl. 417-415.000.
Mahoney, Murray W.; and Ghosh, Amit K., to Rockwell International Corporation. Method of forming a fine grain structure on the surface of an aluminum alloy. 4,799,974, Cl. 148-12.70A.
Mahulikar, Deepak; and Shapiro, Eugene, to Olin Corporation. Process for treating copper-nickel alloys for use in brazed assemblies and product. 4,799,973, Cl. 148-435.000.
Maibach, Bruno: *See*—
Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, 4,800,363, Cl. 340-310.00A.
Maidhof, Rudiger: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; and Maidhof, Rudiger, 4,800,466, Cl. 362-26.000.
Maiello, Mark L.: *See*—
Harley, Naomi H.; and Maiello, Mark L., 4,800,272, Cl. 250-253.000.
Maimone, Peter; and Yamasaki, Richard G., to Silicon System, Ins. Method and apparatus for generating a data recovery window. 4,800,340, Cl. 331-1.00A.
Makino, Takamoto: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.
Malek, Jack H.; and Markley, Stephen A., to KDI American Products, Inc. Water jet aerator with diverter valve. 4,800,046, Cl. 261-50.300.
Malherbe, Andre: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.
Mallant, Jos P., to Justus Technik GmbH Industrie-Anlagen. Process and apparatus for controlling a sorting machine. 4,799,596, Cl. 209-580.000.
Mallard, Jerry F.: *See*—
Pierce, James M., Jr.; and Mallard, Jerry F., 4,800,503, Cl. 364-470.000.
Manaka, Toshio: *See*—
Nagano, Masami; Atago, Takeshi; and Manaka, Toshio, 4,799,469, Cl. 123-418.000.
Manba, Akio: *See*—
Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, 4,800,034, Cl. 252-56.00S.
Mandara, Francesco P.: *See*—
Lasagna, Diego; and Mandara, Francesco P., 4,799,471, Cl. 123-644.000.
Manke, Steven A.: *See*—
Rothgery, Eugene F.; and Manke, Steven A., 4,800,232, Cl. 564-227.000.
Mann, Bernd: *See*—
Dinkel, Emil; Mann, Bernd; Prieser, Gunter; and Schneyer, Gerhard, 4,799,403, Cl. 74-788.000.
Manning, Thomas J.: *See*—
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., 4,800,392, Cl. 343-700.0MS.
Manufacture de Produits Chimiques Protex: *See*—
Ribba, Alain, 4,800,220, Cl. 526-238.230.
Manufacturers Engineering Equipment Corp.: *See*—
Zatko, David A.; and Maguire, John F., 4,800,000, Cl. 204-1.00T.
Marc, Gazalet: *See*—
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazalet; and Torguet, Roger, 4,799,777, Cl. 350-358.000.
Marcon, Charles; and Poullain, Jean. Process for forming helical screw threads having a flank with zero or negative inclination. 4,799,372, Cl. 72-102.000.
Mardon Illingworth Limited: *See*—
Dudzik, Henryk, 4,799,603, Cl. 220-307.000.
Marelli Autronica S.p.A.: *See*—
Lasagna, Diego; and Mandara, Francesco P., 4,799,471, Cl. 123-644.000.
Margraf, David J.: *See*—
Portman, Joseph L., Jr.; and Margraf, David J., 4,799,378, Cl. 73-54.000.
Maringer, Robert E.: *See*—
Ingalls, John P.; Maringer, Robert E.; and Wood, Ray D., 4,799,536, Cl. 164-479.000.
Marion, Sheila: *See*—
DiGiovacchino, David J.; Carlson, Richard A.; Jonas, Rodger H.; and Marion, Sheila, 4,800,096, Cl. 426-577.000.
Markley, Stephen A.: *See*—
Malek, Jack H.; and Markley, Stephen A., 4,800,046, Cl. 261-50.300.
Marko, Ollie W., to Dow Corning Corporation. Silicon carbide preceramic polymers. 4,800,221, Cl. 528-10.000.
Markovic, Zdravko. Auxiliary support for the transport of car trailers or truck trailers. 4,799,698, Cl. 280-46.000.
Marom, Emanuel: *See*—
Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, 4,800,519, Cl. 364-822.000.
Mars Electronics: *See*—
Reger, Philip R.; and Dobbins, Bob M., 4,800,389, Cl. 342-175.000.
Marsh, Paul D.: *See*—
Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., 4,800,053, Cl. 264-83.000.
Marsh, Richard A.: *See*—
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.
Marshall, Claire B.; Lake, Frank B.; and Bushey, Roger A., to Alloy Rods Global, Inc. Cored wire filler metals and a method for their manufacture. 4,800,131, Cl. 428-558.000.
Marshall, Robert M., to Allied-Signal Inc. Overfinish for zero twist fabric. 4,800,117, Cl. 428-260.000.
Martegani, Antonio: *See*—
Milocco, Claudio; Favret, Ugo; and Martegani, Antonio, 4,799,855, Cl. 415-143.000.
Martelec - Societe Civile Particuliere: *See*—
Jacquemet, Georges, 4,799,557, Cl. 173-91.000.
Martin, Cynthia H.: *See*—
La Marre, Thomas M.; and Martin, Cynthia H., 4,800,235, Cl. 514-643.000.
Martin Marietta Corporation: *See*—
Buna, Tibor; and Miller, William H., 4,799,541, Cl. 165-78.000.
Christodoulou, Leontios; Nagle, Dennis C.; and Brupbacher, John M., 4,800,065, Cl. 420-129.000.
Martin, Michael, to Herter Rotor Marketing Division & Co. Beteiligungsgesellschaft mbH. Wind-energy converter. 4,799,860, Cl. 416-119.000.
Martin, Roger J., to Diesel Equipment Limited. Method and apparatus for manufacturing truck bodies. 4,799,873, Cl. 425-73.000.
Martinez, Eduardo S. Board game apparatus for a banking game. 4,799,686, Cl. 273-249.000.
Martini, James A.: *See*—
Westfall, Norman R.; Martini, James A.; and Habbersett, John I., 4,799,333, Cl. 49-446.000.
Marum, John R., to TRW Inc. Redundancy system with distributed mapping. 4,800,302, Cl. 307-441.000.
Maruta, Akinori: *See*—
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Maruta, Akinori, 4,800,134, Cl. 428-626.000.
Maruta, Seiki: *See*—
Iwaizako, Akihiro; Nishii, Hiroshi; and Maruta, Seiki, 4,799,740, Cl. 303-15.000.
Maruyama, Hiroyoshi: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.
Maruzen Sewing Machine Co., Ltd.: *See*—
Koshinaka, Osamu; and Suzuki, Yoshikazu, 4,799,439, Cl. 112-162.000.
Koshinaka, Osamu; Suzuki, Yoshikazu; and Yoneda, Yoshihide, 4,799,440, Cl. 112-162.000.
Marvin Glass & Associates: *See*—
Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., 4,799,678, Cl. 273-1.00E.
Marzari, Robert L.; Southard, Robert K.; and Stape, William J., to AMP Incorporated. Optical fiber continuity testing with pulsating optical test signal. 4,800,265, Cl. 250-227.000.
Marzinotto, Francesco, to Ciba-Giegy AG. Apparatus for transporting perforated objects. 4,799,722, Cl. 294-64.100.
Marzullo, Joseph H., to Pitney Bowes Inc. Document moistening device. 4,799,989, Cl. 156-442.100.
Masaki, Kazumi, to Hayashibara, Ken. Device for limiting inrush current. 4,800,329, Cl. 323-242.000.
Mase, Akira: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Mason, Ronald A., to Smiths Industries Public Limited Company. Optical fibre radiation pyrometer. 4,799,787, Cl. 356-43.000.
Massachusetts Institute of Technology: *See*—
Herbots, Nicole; and Hellman, Olof C., 4,800,100, Cl. 427-38.000.
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, to Sumitomo Metal Industries, Ltd.; and Mitsubishi Jukogyo Kabushiki Kaisha. Process for producing a high strength high-Cr ferritic heat-resistant steel. 4,799,972, Cl. 148-14.000.
Mate, David W.: *See*—
Broughton, George L.; Rogers, Duane E.; and Mate, David W., 4,799,905, Cl. 440-89.000.
Mathew, Ranjan J.; and Lang, Billy J., II, to National Semiconductor Corporation. Method of electroplating a copper lead frame with copper. 4,800,178, Cl. 437-206.000.
Matoba, Hiroshi, to Yoshida Kogyo K. K. Strap retainer. 4,799,298, Cl. 24-140.000.
Matra: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.
Matson, Michael S., to Phillips Petroleum Company. Process for the production of lactams. 4,800,227, Cl. 548-543.000.
Matson, Stephen L., to Sepracor, Inc. Method for resolution of steroisomers in multiphase and extractive membrane reactors. 4,800,162, Cl. 435-280.000.

Matsuda, Akira: *See*—
Yonekura, Katsuyoshi; Uchiyama, Akira; and Matsuda, Akira, 4,800,130, Cl. 428-517.000.

Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, to Minolta Camera Kabushiki Kaisha. Control device for use in a camera having an objective lens. 4,800,409, Cl. 354-402.000.

Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Variable capacity radial flow turbine. 4,799,856, Cl. 415-155.000.

Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Anti-skid control based on duty cycle adjustment. 4,800,498, Cl. 364-426.020.

Matsumoto, Kiyohito: *See*—
Okano, Jun-ichi; and Matsumoto, Kiyohito, 4,800,172, Cl. 437-51.000.

Matsuno, Kenji: *See*—
Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, 4,800,250, Cl. 219-121.630.

Matsuo, Eito: *See*—
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.

Matsuo, Junichi, to NGK Insulators, Ltd. Automatic ultrasonic testing method. 4,799,387, Cl. 73-620.000.

Matsuo, Tamotsu: *See*—
Koishi, Kenji; and Matsuo, Tamotsu, 4,800,548, Cl. 369-54.000.

Matsuoka, Kazumi: *See*—
Oka, Tomoki; Kihira, Hiroshi; Matsuoka, Kazumi; and Ito, Satoshi, 4,800,165, Cl. 436-6.000.

Matsuoka, Yasuo, to Kabushiki Kaisha Toshiba. Apparatus for forming a resist pattern. 4,800,251, Cl. 219-121.430.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ishihara, Shinichiro; Kitagawa, Masatoshi; and Hirao, Takashi, 4,800,174, Cl. 437-101.000.
Koishi, Kenji; and Matsuo, Tamotsu, 4,800,548, Cl. 369-54.000.
Tachita, Ryobun; Ikeda, Ken; and Teranishi, Akio, 4,800,577, Cl. 375-115.000.

Matsushita Electric Works, Limited: *See*—
Kikuchi, Nobuaki; Fukuyama, Hirohisa; Hirabayashi, Tamio; and Imai, Kouichi, 4,799,743, Cl. 312-228.000.

Matsushita, Takashi, to Sanden Corporation. Apparatus for preventing heat damage in an electromagnetic clutch. 4,799,578, Cl. 192-84.00C.

Matsutani, Kanji, to Matsutani Seisakusho Co., Ltd. Apparatus for attaching suture to surgical needle. 4,799,311, Cl. 29-209.000.

Matsutani Seisakusho Co., Ltd.: *See*—
Matsutani, Kanji, 4,799,311, Cl. 29-209.000.

Matsuura Machinery Corporation: *See*—
Itoh, Saburo, 4,799,582, Cl. 198-346.100.

Matsuyama, Jiro, to Mitsubishi Denki Kabushiki Kaisha. Magnetic disk device with component materials having improved silicon content. 4,800,456, Cl. 360-109.000.

Matthiesen, Martin: *See*—
Kleiner, Lothar; and Matthiesen, Martin, 4,800,253, Cl. 219-553.000.

Maxey, Jay A.: *See*—
Ovens, Kevin M.; Maxey, Jay A.; and Greenberg, Craig B., 4,800,296, Cl. 307-291.000.

May, Pierluigi; and Maggioni, Virginio, to Industire Magneti Marelli S.r.l. Fluid pressure device for operating the brake members of a vehicle with a wheel anti-locking function. 4,799,742, Cl. 303-115.000.

May, Wolfgang: *See*—
Heckmann, Johannes; and May, Wolfgang, 4,800,067, Cl. 422-86.000.

Mayes, Ronald A.; and Golias, Tipton A., to Helena Laboratories Corporation. Container and non-removable cover. 4,799,597, Cl. 215-250.000.

Mayz, Allan. Low pressure warning device for scuba divers. 4,800,373, Cl. 340-626.000.

Mazarguil, Pierre: *See*—
Brami, Max; and Mazarguil, Pierre, 4,799,348, Cl. 52-742.000.

Mazda Motor Corporation: *See*—
Fujii, Hiroshi, 4,799,581, Cl. 198-341.000.
Harasaki, Hayatsugu, 4,799,730, Cl. 296-195.000.

Mazzola Louis R., to Lever Brothers Company. Process for making a heavy duty liquid detergent composition. 4,800,037, Cl. 252-109.000.

MBB GmbH: *See*—
Gerdes, Erwin, 4,799,415, Cl. 83-177.000.

McAfee, Thomas H., to Charmac, Inc. Wardrobe door. 4,799,529, Cl. 160-206.000.

McAllister, Jerome W.; Pham, Lien-Huong T.; and Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Ceramic articles containing silicon carbide. 4,800,180, Cl. 501-88.000.

McAlpine, Gary L., to Aptec Computer Systems, Inc. Interleaved memory addressing system and method using a parity signal. 4,800,535, Cl. 365-230.000.

McCartney, Charles P., Jr.: *See*—
Bish, James R.; McCartney, Charles P., Jr.; and Meadows, Clarence A., 4,800,142, Cl. 429-130.000.

McClellan, Melvin L., to Elkem Metals Company. Soft composite metal powder and method to produce same. 4,799,955, Cl. 75-247.000.

McClure, John R.: *See*—
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., 4,799,625, Cl. 241-30.000.

McCormick, William H.: *See*—
Clapp, Timothy D.; and McCormick, William H., 4,799,554, Cl. 166-312.000.

McCoy, Charles. Method and apparatus for analyzing product flow. 4,799,880, Cl. 432-13.000.

McDonnell Douglas: *See*—
Wells, Wesley G., 4,799,834, Cl. 408-200.000.

McDougall, Wallace R.; and Seastone, James C., to Copperweld Corporation. Tubing for energy absorbing structures. 4,799,971, Cl. 148-12.00B.

McFadyen, Robert C., to Lever Brothers Company. Self-sealing closure. 4,799,598, Cl. 215-260.000.

McGrady, Michael B., to Boeing Company, The. Universal life support system. 4,799,476, Cl. 128-202.110.

McGuire, Dane T.: *See*—
Grier, John K.; and McGuire, Dane T., 4,799,881, Cl. 432-77.000.

McKay, Robert S.; and Dahm, Dennis R. Motorless toy vehicle and propelling track. 4,799,916, Cl. 446-444.000.

McKenney, Darryl J.: *See*—
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

McMahon, Garfield W.: *See*—
Franklin, J. Barrie; and McMahon, Garfield W., 4,800,542, Cl. 367-154.000.

McMahon, Paul E.; and Chung, Tai-Shung, to Hoechst Celanese Corporation. Method of forming composite fiber blends and molding same. 4,799,985, Cl. 156-166.000.

McMaster, Harold A. Fluid power transfer device. 4,799,870, Cl. 418-151.000.

McNamara, James A., to Allied Automation Systems, Inc. Proximity switch mounting plate. 4,800,241, Cl. 200-82.00E.

McNamara, Timothy G.: *See*—
DeFazio, John J.; and McNamara, Timothy G., 4,800,564, Cl. 371-61.000.

McNeilab, Inc.: *See*—
Carmosin, Richard J.; and Carson, John R., 4,800,207, Cl. 514-413.000.

Mead Corporation, The: *See*—
Gottschalk, Peter; and Schuster, Gary B., 4,800,149, Cl. 430-138.000.

Meadows, Clarence A.: *See*—
Bish, James R.; McCartney, Charles P., Jr.; and Meadows, Clarence A., 4,800,142, Cl. 429-130.000.

Medasonics, Inc.: *See*—
Ingle, Frank W.; and Claude, John P., 4,800,317, Cl. 310-334.000.

Medford, George F.: *See*—
Saad, William T.; and Medford, George F., 4,800,127, Cl. 428-447.000.

Medvinsky, Boris; and Radomyshelsky, Leonid, to Tri Electronics Company, Inc. Dynamic precious metal assay method. 4,799,999, Cl. 204-1.00T.

Megapulse, Inc.: *See*—
Enge, Per, 4,800,391, Cl. 342-389.000.

Mehta, Atul M. Taste-masked pharmaceutical compositions. 4,800,087, Cl. 424-497.000.

Meier, Otto; Sadek, Kurt; Sikoronja, Zvonko; and Schroder, Johann, to U.S. Philips Corp. Discoid cold cartridge insertable into an ice-cream maker. 4,799,364, Cl. 62-342.000.

Meier, Rolf, to Mitel Corporation. Compensation circuit for use with an integrating amplifier. 4,800,586, Cl. 379-399.000.

Meiklejohn, William H.: *See*—
Kryder, Mark; Cain, William C.; and Meiklejohn, William H., 4,800,457, Cl. 360-113.000.

Meinken, Bernhard: *See*—
Simnovec, Andrej; Meinken, Bernhard; and Schwing, Friedrich, 4,799,573, Cl. 182-2.000.

Menasha Corporation: *See*—
Luft, Lee T., 4,799,433, Cl. 108-51.100.

Mennicke, Stefan: *See*—
Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, 4,800,143, Cl. 429-153.000.

Mensch, William D., Jr. Topography of integrated circuit including a microprocessor. 4,800,487, Cl. 364-200.000.

Merck & Co., Inc.: *See*—
Tischler, Allan N.; Durette, Philippe L.; Witzel, Bruce E.; and Lanza, Thomas J., Jr., 4,800,211, Cl. 514-443.000.

Merck Frosst Canada, Inc.: *See*—
Adams, Julian; and Guindon, Yvan, 4,800,228, Cl. 549-470.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See*—
Baur, Guter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 4,799,774, Cl. 350-346.000.
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.

Meriwether, Jon D., to Follansbee Steel Corporation. Modular float drum system. 4,799,445, Cl. 114-267.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Sjoerdsma, Albert, 4,800,209, Cl. 514-401.000.

Mertel, Walter H.: *See*—
Murmann, Gunter; and Mertel, Walter H., 4,800,245, Cl. 200-345.000.

Mertens, Miles A. Fish hook eye cleaner. 4,799,326, Cl. 43-4.000.

Mesmer, Jeffrey C. Microscope drape. 4,799,779, Cl. 350-585.000.

Messer Griesheim GmbH: *See*—
Eschwey, Manfred; and Schleser, Werner, 4,800,189, Cl. 502-400.000.

Messerschmitt-Boelkow-Blohm GmbH: *See*—
Baymak, Faruk; and Stueben, Helmut, 4,799,632, Cl. 244-122.00R.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Held, Manfred; and Kirsche, Horst, 4,799,427, Cl. 102-215.000.

Messmer, Walter J., III: *See*—
Roos, Mark D.; and Messmer, Walter J., III, 4,800,464, Cl. 361-424.000.

Metabowerke GmbH & Co.: *See*—
Schulz, Manfred; Wagemann, Alfred; and Waldner, Gerhard, 4,800,315, Cl. 310-261.000.

Metal Box p.l.c.: *See*—
Collins, Malcolm G.; and Rayner, Adrien P., 4,799,602, Cl. 220-307.000.

Metal Box plc: *See*—
Collins, Malcolm G.; and Parry, Christopher S., 4,799,306, Cl. 29-453.000.

Mettler Instruments AG: *See*—
Erb, Karl J., 4,799,798, Cl. 356-374.000.

Metz, Harald: *See*—
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.

Meyer, Gerhard: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.

Meyer, Just B., to Kembo B.V. Chair or armchair. 4,799,735, Cl. 297-440.000.

Meyer, Philippe, to Cegedur Societe de Transformation de l'Aluminum Pechiney. Process for the heat treatment of Al alloys containing Li with a view to preserving their surface health. 4,799,976, Cl. 148-20.300.

Meyer, Stephen F.; and Hood, Thomas G., to Southwall Technologies, Inc. Heat reflecting composite films and glazing products containing the same. 4,799,743, Cl. 350-1.700.

Meyerhoff, Shirley B.; and Quellette, Charles W. Oil transfer system. 4,799,825, Cl. 405-188.000.

Michael, George W.: *See*—
Capp, Randolph E.; Johnescu, Michael M.; Laudig, Ronald C.; Michael, George W.; and Smith, Donald L., 4,799,900, Cl. 439-585.000.

Michaud, Pascal: *See*—
Lantz, Andre ; and Michaud, Pascal, 4,800,234, Cl. 568-842.000.

Microdot Inc.: *See*—
Stritzke, Bernard G.; and Rericha, Brian F., 4,799,691, Cl. 277-12.000.

Microlife Technics, Inc.: *See*—
Vandenbergh, Peter A., 4,800,158, Cl. 435-172.100.

Midgley, Ronald A., to ROLLS-ROYCE plc. Turbopropeller or turbofan gas turbine engine. 4,799,354, Cl. 60-39.142.

Mierswa, Christian; and Schmutz, Friedrich, to Ernst Schmutz GmbH. Process and apparatus for decontaminating plant parts contaminated with radioactive material. 4,800,063, Cl. 376-316.000.

Mikami, Tsutomu; and Kojima, Masaaki, to Sony Corporation. Battery level indicator supplying data from a memory to a display in a power-off state. 4,800,336, Cl. 324-426.000.

Mikasa Sangyo Co., Ltd.: *See*—
Asano, Akio, 4,799,398, Cl. 74-473.00R.

Miknevich, Joseph P.: *See*—
Hassick, Denis E.; and Miknevich, Joseph P., 4,800,039, Cl. 252-181.000.

Mikogami, Takashi: *See*—
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.

Milby, Gregory H.: *See*—
Sanwo, Ikuo J.; and Milby, Gregory H., 4,800,422, Cl. 357-82.000.

Miles Inc.: *See*—
Bomer, Bruno; and Piejko, Karl-Erwin, 4,800,169, Cl. 436-166.000.

Milkovic, Miran, to General Electric Company. Switched-capacitor watthour meter circuit having reduced capacitor ratio. 4,800,333, Cl. 324-142.000.

Mill-Max MFg. Corp.: *See*—
Sutcliffe, Roger F., 4,799,904, Cl. 439-733.000.

Miller, Alex E., to Union Oil Company of California. Method for producing a solid animal feed supplement. 4,800,092, Cl. 426-69.000.

Miller, Donald L. Automobile trunk loading and unloading device. 4,799,849, Cl. 414-462.000.

Miller, Douglas P., to Applied Power Inc. Swing clamp. 4,799,657, Cl. 269-24.000.

Miller, Gary L.: *See*—
White, Robert L.; Highton, Frederick J.; Ito, Kazuo; and Miller, Gary L., 4,800,365, Cl. 341-119.000.

Miller, Robert E. Infrasonic switch. 4,800,293, Cl. 307-117.000.

Miller, William H.: *See*—
Buna, Tibor; and Miller, William H., 4,799,541, Cl. 165-78.000.

Miller, William J., to Racal Data Communications, Inc. Differential correlator circuit. 4,800,518, Cl. 364-819.000.

Milley, Gyula: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.

Millikan, Joseph B., to Gilbarco, Inc. Centrifugal system with pump for separating air from fuel. 4,799,940, Cl. 55-52.000.

Milne, Edward J.: *See*—
Burrows, Donald L.; and Milne, Edward J., 4,799,562, Cl. 177-229.000.

Milo, Salvatore A.: *See*—
Schneider, Marvin; Blanco, Louis A.; and Milo, Salvatore A., 4,800,247, Cl. 219-10.55E.

Milocco, Claudio; Favret, Ugo; and Martegani, Antonio, to Industrie Zanussi S.p.A. Impeller construction for centrifugal pump of two-pump pump unit. 4,799,855, Cl. 415-143.000.

Minami, Koji: *See*—
Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, 4,799,968, Cl. 136-258.000.

Minard, Serge: *See*—
Baize, Dominique; Cleand, Maurice; and Minard, Serge, 4,800,484, Cl. 364-200.000.

Mine Safety Appliances Company: *See*—
Bossart, Clayton J.; Fertig, Glenn H.; and Welker, Albert L., 4,799,374, Cl. 73-1.00G.

Minnesota Mining and Manufacturing Company: *See*—
Bloecher, Ulrich; and Duwell, Ernest J., 4,799,939, Cl. 51-293.000.
McAllister, Jerome W.; Pham, Lien-Huong T.; and Sowman, Harold G., 4,800,180, Cl. 501-88.000.

Minolta Camera Kabushiki Kaisha: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.
Takeda, Katsuhiko, 4,800,414, Cl. 355-58.000.
Ueda, Hideaki; Yuge, Shizuo; and Konishi, Katsutoshi, 4,800,144, Cl. 430-58.000.
Ueda, Masahide, 4,800,412, Cl. 355-3.0DD.
Yamakawa, Kazuo, 4,799,747, Cl. 350-6.800.

Minoura, Kazuo: *See*—
Shikichi, Satoshi; Aoki, Akio; and Minoura, Kazuo, 4,800,546, Cl. 369-44.000.
Suzuki, Kenichi; and Minoura, Kazuo, 4,800,258, Cl. 235-479.000.

Minster Machine Co., The: *See*—
Wissman, Terry L.; and Schockman, Robert L., 4,799,846, Cl. 413-66.000.

Mintz, Michael D., to International Technidyne Corporation. Moveable blotter apparatus and method for use in bleeding-time tests. 4,799,488, Cl. 128-637.000.

Minuhin, Vadim B.; and Von Deylen, Vernon F., to Magnetic Peripherals Inc. Retriggerable monostable multivibrator. 4,800,295, Cl. 307-273.000.

Mishina, Yoshihiko: *See*—
Yamamoto, Takashi; Mishina, Yoshihiko; and Oda, Masaaki, 4,799,761, Cl. 350-96.310.

Mitchell, Allan T.: *See*—
Rao, Kalipatnam V.; Mitchell, Allan T.; and Paterson, James L., 4,799,992, Cl. 156-643.000.

Mitchell, Clair E.: *See*—
Cinzori, Carl; Williams, Carl, Jr.; Mitchell, Clair E.; and Striker, David L., 4,799,309, Cl. 29-596.000.

Mitchell, John C.: *See*—
Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., 4,800,485, Cl. 364-200.000.

Mitel Corporation: *See*—
Meier, Rolf, 4,800,586, Cl. 379-399.000.

Mitsuba Electric Mfg. Co., Ltd.: *See*—
Takahashi, Yoshikazu; and Nishiyama, Toshio, 4,799,418, Cl. 91-449.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Ito, Hiroki, 4,799,454, Cl. 118-723.000.
Matsuyama, Jiro, 4,800,456, Cl. 360-109.000.
Nakamura, Takashi, 4,799,363, Cl. 62-160.000.
Takechi, Moriaki; Watanabe, Tsugio; and Kuroda, Shigenori, 4,800,355, Cl. 335-301.000.
Yamasaki, Hidenori, 4,800,449, Cl. 360-71.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Izaki, Kansei; Kawakami, Takamasa; Hakkei, Kouichi; and Ando, Kazuhiro, 4,800,182, Cl. 501-92.000.
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Iijima, Katsuhiko; and Itami, Kazuo, 4,799,564, Cl. 180-65.500.
Kubo, Haruaki; Umeda, Mitsuru; and Iwakoshi, Hiromitsu, 4,799,838, Cl. 409-234.000.
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Yamamoto, Takashi; Mishina, Yoshihiko; and Oda, Masaaki, 4,799,761, Cl. 350-96.310.

Mitsui Petrochemical Industries, Ltd.: *See*—
Yonekura, Katsuyoshi; Uchiyama, Akira; and Matsuda, Akira, 4,800,130, Cl. 428-517.000.

Mitsui Toatsu Chemical, Incorporated: *See*—
Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, 4,800,160, Cl. 435-177.000.

Mitsui, Tsutomu: *See—*
Koori, Yasuo; and Mitsui, Tsutomu, 4,800,497, Cl. 364-424.100.
Mitsunaga, Takuro: *See—*
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.
Miyagi, Hiroshi; and Ohno, Akihiko, to Nihon Taisanbin Kogyo Kabushiki Kaisha. Apparatus for carrying bottles in bottle making machine. 4,799,947, Cl. 65-158.000.
Miyahara, Junji: *See—*
Arakawa, Satoshi; Miyahara, Junji; and Takahashi, Kenji, 4,800,136, Cl. 428-690.000.
Miyake, Hiroyuki: *See—*
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.
Miyake, Izumi: *See—*
Kaneko, Kiyotaka; Oda, Kazuya; Takahashi, Kimihide; and Miyake, Izumi, 4,800,448, Cl. 360-35.100.
Miyamoto, Yoshikazu, to Rubicon Co., Ltd. Ratchet screwdriver. 4,799,407, Cl. 81-58.300.
Miyao, Hidetoshi: *See—*
Tsukamoto, Takeshi; Tanimoto, Takao; and Miyao, Hidetoshi, 4,799,789, Cl. 356-73.100.
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, to Sharp Kabushiki Kaisha. Bilingual translation system capable of memorizing learned words. 4,800,522, Cl. 364-900.000.
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, to Takeda Chemical Industries, Ltd. Coating apparatus. 4,799,449, Cl. 118-19.000.
Miyawaki, Mamoru, to Canon Kabushiki Kaisha. Optical function element and a method for manufacturing the same. 4,799,750, Cl. 350-96.130.
Miyazaki, Minoru: *See—*
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Miyoshi, Motosuke; Okumura, Katsuya; and Ogawa, Shigeru, to Kabushiki Kaisha Toshiba. Method and apparatus for scanning a laser beam to examine the surface of semiconductor wafer. 4,800,268, Cl. 250-234.000.
Mizuhara, Howard, to GTE Products Corporation. Method of making a crucible and melting reactive metal alloys. 4,799,532, Cl. 164-47.000.
Mizukami, Kunio: *See—*
Kawasaki, Masaki; and Mizukami, Kunio, 4,800,184, Cl. 501-140.000.
Mizumoto, Kousei: *See—*
Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, 4,799,565, Cl. 180-69.400.
MMD Design and Consultancy Limited: *See—*
Potts, Alan, 4,799,627, Cl. 241-236.000.
Mobil Oil Corporation: *See—*
Sprunt, Eve S.; and Yale, David P., 4,799,382, Cl. 73-153.000.
Mochizuki, Kousuke: *See—*
Kobayashi, Hisao; and Mochizuki, Kousuke, 4,799,502, Cl. 132-53.000.
Mogi, Hiroyuki; and Ozawa, Kazuhisa, to Dai-ichi Seiko Kabushiki Kaisha. IC tester socket. 4,799,897, Cl. 439-264.000.
Mohr, Gregory L., to Butler Manufacturing Company. Multi-service preset access unit for cellular raceway. 4,800,237, Cl. 174-48.000.
Molodan, Oleg I.: *See—*
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg I.; and Sizova, Svetlana I., 4,799,919, Cl. 474-205.000.
Monarch Tool & Manufacturing Company: *See—*
Hall, Mitchell A., 4,799,580, Cl. 194-235.000.
Mongiano, Riccardo: *See—*
Egidi, Corrado; and Mongiano, Riccardo, 4,799,397, Cl. 74-473.00R.
Monjoie, Michel W. J. P. R., to Engetra S.A. Gas and liquid contact sheet and packing. 4,800,047, Cl. 261-112.200.
Montanwerke Walter GmbH: *See—*
Vollmer, Rolf, 4,799,837, Cl. 409-232.000.
Monty, Robert W.: *See—*
Silverstein, Louis D.; and Monty, Robert W., 4,800,375, Cl. 340-703.000.
Moody, David M.: *See—*
Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., 4,799,546, Cl. 166-250.000.
Moon, William G.: *See—*
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., 4,799,545, Cl. 166-246.000.
Moore Business Forms, Inc.: *See—*
Jenkins, Richard A., 4,799,618, Cl. 229-92.300.
Moore, Dale C. Tow bar and method of use thereof. 4,799,711, Cl. 280-444.000.
Moore, Jonathan D.: *See—*
Sheppard, John H.; and Moore, Jonathan D., 4,799,676, Cl. 272-130.000.
Moorehead, Thomas J.; and Bayless, Allan V., to Norwich Eaton Pharmaceuticals, Inc. Acylphosphorotriamides useful as lipid-altering agents. 4,800,194, Cl. 514-89.000.
Morgan, Clive A.: *See—*
Cook, Timothy; Craigen, Joseph G.; and Morgan, Clive A., 4,799,647, Cl. 251-356.000.
Mori, Katsuhisa: *See—*
Tanaka, Tsuneo; and Mori, Katsuhisa, 4,799,514, Cl. 137-625.230.
Mori, Kei. Flying object for collecting solar rays. 4,799,629, Cl. 244-23.00C.
Mori, Yoshiaki: *See—*
Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, 4,800,459, Cl. 361-321.000.
Morimoto, Kiyoshi; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic materials and a color photographic developer composition comprising hydroxylamine and stabilizer. 4,800,153, Cl. 430-380.000.
Moriya, Masayoshi: *See—*
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.
Morozumi, Toshiki: *See—*
Muramatsu, Masayauki; and Morozumi, Toshiki, 4,800,346, Cl. 333-140.000.
Morris, Charles; and Bateson, George, to Ogilvie Mills, Inc. Dried nutmeat and starch food product and process. 4,800,097, Cl. 426-632.000.
Morris, Michael; and Vickers, John, to Oxley Developments Company Limited. Metallizing paste. 4,799,958, Cl. 106-1.120.
Mortara, David W. Analog-to-digital converter utilizing vernier techniques. 4,800,364, Cl. 341-131.000.
Morton, Kenneth P.: *See—*
Knoedler, Roy E.; Morton, Kenneth P.; and Schroer, Charles E., 4,799,700, Cl. 280-87.051.
Moser, Ronald T. Portable water purification system. 4,800,018, Cl. 210-266.000.
Moshofsky, Gerald S., to Newood Products of Oregon, Inc. Outside-corner shelf assembly. 4,799,434, Cl. 108-108.000.
Moss, Wayne L.: *See—*
Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., 4,800,071, Cl. 423-321.00R.
Motorola, Inc.: *See—*
Anderson, Steven L., 4,800,575, Cl. 375-80.000.
Balzano, Quirino; and Garay, Oscar M., 4,800,395, Cl. 343-895.000.
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,800,421, Cl. 357-80.000.
Dehganpour, Sam; and Pelley, Perry H., III, 4,800,531, Cl. 365-222.000.
Deutsch, Robert W., 4,800,513, Cl. 364-571.020.
Dockrey, Jasper W., 4,799,991, Cl. 156-643.000.
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., 4,800,392, Cl. 343-700.0MS.
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.
Perkins, Geoffrey W., 4,800,429, Cl. 358-148.000.
Rosar, George C.; and Clifford, David G., Jr., 4,800,348, Cl. 333-202.000.
Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., 4,799,392, Cl. 73-865.900.
Yu, Ruey J.; and Bormann, Alan R., 4,800,298, Cl. 307-443.000.
Motoyama, Shimesu: *See—*
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.
Mount, Houston B., II, to Amoco Corporation. Method and apparatus for determining cement conditions. 4,800,537, Cl. 367-35.000.
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, to Motorola, Inc. Paged memory management unit capable of selectively supporting multiple address spaces. 4,800,489, Cl. 364-200.000.
Mozley, Richard H., to National Research Development Corporation. Minerals separator. 4,799,920, Cl. 494-23.000.
Mueller, Manfred: *See—*
Kreider, Hans; and Mueller, Manfred, 4,799,842, Cl. 411-171.000.
Mueller, Peter S. Method of controlling tobacco use. 4,800,204, Cl. 514-267.000.
Mueller, Rudolf; and Strasser, Ludwig, to Bayerische Motoren Werke Aktiengesellschaft. Wheel suspension for rear wheels of motor vehicles equipped with front wheel steering, especially passenger motor vehicles. 4,799,703, Cl. 280-91.000.
Muijderman, Everhardus: *See—*
Bremer, Fridtjof; and Muijderman, Everhardus, 4,799,421, Cl. 92-162.00R.
Mukai, Ryoichi, to Fujitsu Limited. Method for fabricating semiconductor device. 4,800,179, Cl. 437-203.000.
Muller, Jean M., to Figg and Muller Engineers, Inc. Method of constructing the approach and main spans of a cable stayed segmental bridge. 4,799,279, Cl. 14-1.000.
Muller, Marcel: *See—*
Alig, Leo; and Muller, Marcel, 4,800,206, Cl. 514-332.000.
Muller, Reinhard: *See—*
Borner, Manfred; Muller, Reinhard; and Trommer, Gert, 4,799,749, Cl. 350-96.130.
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., to Cetus Corporation. Process for amplifying, detecting, and/or cloning nucleic acid sequences. 4,800,159, Cl. 435-172.300.
Mumallah, Naim A.; and Doe, Peter H., to Phillips Petroleum Company. Gelable compositions and use thereof in steam treatment of wells. 4,799,548, Cl. 166-288.000.

Murakami, Keinosuke; Enami, Kazumasa; and Yagi, Nobuyuki, to Nippon Hoso Kyokai. Fundamental unit for processing video signals. 4,800,430, Cl. 358-160.000.

Muramatsu, Masayauki; and Morozumi, Toshiki, to Delphi Company Ltd. Delay line and its manufacturing method. 4,800,346, Cl. 333-140.000.

Murata Manufacturing Co., Ltd.: *See*—
Kinoshita, Humiaki, 4,800,343, Cl. 333-24.00C.
Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, 4,800,459, Cl. 361-321.000.
Yorita, Tadahiro; and Hiroshima, Motoharu, 4,800,347, Cl. 333-202.000.

Murata, Masae: *See*—
Yamasaki, Hidetoshi; and Murata, Masae, 4,800,554, Cl. 369-291.000.

Murata, Shinji: *See*—
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, 4,800,413, Cl. 355-45.000.

Murdoch, Joseph R.; and Loomis, Gary L., to Du Pont de Nemours, E. I., and Company. Polylactide compositions. 4,800,219, Cl. 525-413.000.

Murdter, Herbert; and Ast, Adolf, to August Sauter GmbH. Measuring apparatus. 4,799,559, Cl. 177-124.000.

Murmann, Gunter; and Mertel, Walter H., to Cherry-Mikroschalter GmbH. Key module for key-actuated membrane switch panels. 4,800,245, Cl. 200-345.000.

Muroran Institute of Technology: *See*—
Kenjyo, Tadao, 4,800,139, Cl. 429-42.000.

Murphy, John P., to Lubrizol Corporation, The. Aliphatic hydrocarbon substituted aromatic hydrocarbons to control black sludge in lubricants. 4,800,032, Cl. 252-51.50A.

Muscat, Peter P. Tonneau cover mechanism for convertible automobiles. 4,799,729, Cl. 296-136.000.

Musemeci, Salvatore, to SGS-ATES Componenti Elettronici S.p.A. Bipolar power transistor having bypassable incorporated-base ballast resistance. 4,800,416, Cl. 357-34.000.

Musgrave, Daniel D. Magazine carrier for use on firearms or other support. 4,799,323, Cl. 42-90.000.

Musha, Toshimitsu, to Olympus Optical Company, Ltd. Method and apparatus for measuring immunological reaction with the aid of phase-modulation of light. 4,799,796, Cl. 356-336.000.

Musser's Potato Chips, Inc.: *See*—
August, Joseph R., 4,800,090, Cl. 426-243.000.

Myantt, Roy L. Interior reflective chamber embodying an ordering principal for color reflectors therein. 4,799,794, Cl. 356-246.000.

Myers, Paul A.; and Jensen, Charles O. Clutch and brake friction assembly and method of making same. 4,799,579, Cl. 192-107.00M.

Myers, Thomas W.; and Jacobson, Earl C., to Deere & Company. Drawbar coupler. 4,799,706, Cl. 280-504.000.

Myles, Willie L.: *See*—
Bertram, James L.; Myles, Willie L.; and Kubisiak, Michael P., 4,800,215, Cl. 523-414.000.

N.K.F. Groep B.V.: *See*—
Deurloo, Johannis M., 4,799,903, Cl. 439-696.000.

Nabisco Brands, Inc.: *See*—
Carroll, Thomas J.; and Kehoe, Gary S., 4,800,095, Cl. 426-548.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,800,099, Cl. 426-641.000.
Simelunas, William J.; Shoiket, Henry N.; and Espejo, Celso, 4,799,583, Cl. 198-418.100.

Nagai, Kiyotake: *See*—
Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, 4,800,435, Cl. 358-213.190.

Nagakawa, Hiroshi: *See*—
Kaneko, Masato; Nagakawa, Hiroshi; and Yamashita, Kenichi, 4,800,030, Cl. 252-32.500.

Nagano, Masami; Atago, Takeshi; and Manaka, Toshio, to Hitachi, Ltd. Apparatus and method for controlling ignition timing for internal combustion engine. 4,799,469, Cl. 123-418.000.

Nagle, Dennis C.: *See*—
Christodoulou, Leontios; Nagle, Dennis C.; and Brupbacher, John M., 4,800,065, Cl. 420-129.000.

Naiki, Kazuaki, to NEC Corporation. Electrode assembly for electrostatic lens of electron gun. 4,800,318, Cl. 313-414.000.

Nail, James W., to Craftsman Printing Company. Apparatus for compiling sheets in a binding line. 4,799,661, Cl. 270-54.000.

Nakagawa, Katsuya, to Nintendo Co., Ltd. System for determining authenticity of an external memory used in an information processing apparatus. 4,799,635, Cl. 364-900.000.

Nakagawa, Yutaka: *See*—
Suga, Ryoichi; Nakagawa, Yutaka; and Watanabe, Yoshimi, 4,800,376, Cl. 340-721.000.

Nakai, Kaysuyuki: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Nakajima, Hiroshi: *See*—
Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, 4,800,435, Cl. 358-213.190.

Nakamae, Masahiko, to NEC Corporation. Semiconductor device having multilayer silicide contact system and process of fabrication thereof. 4,800,177, Cl. 437-193.000.

Nakamura, Ikuro: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.

Nakamura, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Room air conditioner. 4,799,363, Cl. 62-160.000.

Nakanihon Juki Co., Ltd.: *See*—
Nakatani, Toshio; and Ohshima, Atsumi, 4,799,442, Cl. 112-262.200.

Nakanishi, Motohiro: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

Nakanishi, Nobuyasu: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.

Nakanishi, Yoshinori, to Toshiba Kikai Kabushiki Kaisha. Spindle positioning apparatus. 4,800,325, Cl. 318-661.000.

Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, to Combi Co., Ltd. Bicycle ergometer and eddy current brake therefor. 4,800,310, Cl. 310-105.000.

Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, to Sanyo Electric Co., Ltd. Photovoltaic device. 4,799,968, Cl. 136-258.000.

Nakatani, Toshio; and Ohshima, Atsumi, to Nakanihon Juki Co., Ltd. Method of and apparatus for feeding fabric to sewing machine. 4,799,442, Cl. 112-262.200.

Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, to Nihon Shinku Gijutsu Kabushiki Kaisha. Method of forming a thin film by chemical vapor deposition. 4,800,105, Cl. 427-253.000.

Nalco Chemical Company: *See*—
Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., 4,800,071, Cl. 423-321.00R.
Kiss, Charles R.; and Huang, Shu-Jen W., 4,800,217, Cl. 525-163.000.
La Marre, Thomas M.; and Martin, Cynthia H., 4,800,235, Cl. 514-643.000.

Namekawa, Kouroku, to Aloka Co., Ltd. Doppler ultrasonic diagnostic apparatus. 4,799,490, Cl. 128-661.090.

Nance, William A.: *See*—
Passmore, Paul R.; and Nance, William A., 4,800,538, Cl. 367-55.000.

Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, to Ricoh Company, Ltd. Ink-jet printer with an encased printer head unit. 4,800,398, Cl. 346-75.000.

National Research Development Corporation: *See*—
Davidson, John F.; Niranjan, Keshavan; and Pandit, Aniruddha B., 4,799,862, Cl. 416-242.000.
Fray, Derek J., 4,800,069, Cl. 423-97.000.
Mozley, Richard H., 4,799,920, Cl. 494-23.000.
Unsworth, Peter J., 4,800,326, Cl. 318-729.000.

National Semiconductor Corporation: *See*—
Mathew, Ranjan J.; and Lang, Billy J., II, 4,800,178, Cl. 437-206.000.
Wong, Hee, 4,800,576, Cl. 375-83.000.

National Standard Company: *See*—
Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., 4,799,495, Cl. 128-754.000.

Natsui, Yoshinobu, to NEC Corporation. Integrated circuit with improved monitoring function by use of built-in elements. 4,800,418, Cl. 357-68.000.

NCR Corporation: *See*—
Sanwo, Ikuo J.; and Milby, Gregory H., 4,800,422, Cl. 357-82.000.

NEC Corporation: *See*—
Aoki, Takahiro; and Tejima, Shunichiro, 4,800,560, Cl. 370-104.000.
Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, 4,800,435, Cl. 358-213.190.
Ishi, Yuuhei, 4,800,561, Cl. 370-104.000.
Kurokawa, Hidefumi, 4,800,440, Cl. 358-260.000.
Naiki, Kazuaki, 4,800,318, Cl. 313-414.000.
Nakamae, Masahiko, 4,800,177, Cl. 437-193.000.
Natsui, Yoshinobu, 4,800,418, Cl. 357-68.000.
Yoshizawa, Shigeo; and Ishii, Eiichi, 4,800,338, Cl. 329-103.000.

Nelson, Anthony J.; and Duggan, Peter J., to Imperial Chemical Industries, PLC. Substituted phthalocyanine photoconductor and charge transport phase. 4,800,145, Cl. 430-58.000.

Nelson, Craig H., to SpaceLabs, Inc. Method and apparatus for indirect blood pressure measurement. 4,799,492, Cl. 128-672.000.

Neue Rotoprint GmbH: *See*—
Burger, Karl H., 4,799,664, Cl. 271-277.000.

Neugebauer, Manfred: *See*—
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.

Nevis, Elizabeth A.: *See*—
Kahn, Frederick J.; Nevis, Elizabeth A.; and Leff, Jerry, 4,799,770, Cl. 350-331.00R.

New York Institute of Technology: *See*—
Glenn, William E., 4,800,426, Cl. 358-141.000.

New York University: *See*—
Harley, Naomi H.; and Maiello, Mark L., 4,800,272, Cl. 250-253.000.

Newbury, Renton D. Method of and apparatus for treatment of muscle imbalance. 4,799,500, Cl. 128-859.000.

Newman, Gary L.: *See*—
Simpson, John P.; Newman, Gary L.; Larnerd, James M.; and Emerick, Alan J., 4,799,616, Cl. 228-125.000.

Newood Products of Oregon, Inc.: *See*—
Moshofsky, Gerald S., 4,799,434, Cl. 108-108.000.
Newswanger, Craig, to Advanced Dimensional Displays, Inc. Real time autostereoscopic displays using holographic diffusers. 4,799,739, Cl. 350-3.700.
Ng, Lung S. B.: *See*—
Bolger, John G.; and Ng, Lung S. B., 4,800,328, Cl. 320-2.000.
NGK Insulators, Ltd.: *See*—
Kajihara, Takehiro; Atsumi, Senji; and Izumiya, Hirotsugu, 4,800,320, Cl. 313-625.000.
Matsuo, Junichi, 4,799,387, Cl. 73-620.000.
NGK Spark Plug Co., Ltd.: *See*—
Okuno, Akiyasu; Watanabe, Masakazu; and Ikoma, Kazuhiko, 4,800,137, Cl. 428-698.000.
Nichols, Mark A., to Pathfinder Systems, Inc. Telephone switching system frame sync generator. 4,800,558, Cl. 370-67.000.
Nickels, Richard C., Jr.; and Podhorniak, Gary S., to Black & Decker, Inc. Transformer support assembly. 4,800,357, Cl. 336-198.000.
Nicklas, Alexander: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.
Nicklas, Norman E.: *See*—
Johnson, Ronald F.; and Nicklas, Norman E., 4,799,921, Cl. 604-51.000.
Nicoll, Harry G., to Helix Technology Corporation. Cryogenic refrigerator compressor with externally adjustable by-pass/relief valve. 4,799,359, Cl. 62-6.000.
Nielsen, Richard H.: *See*—
Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., 4,800,014, Cl. 208-157.000.
Nieminen, Jorma J., to A. Ahlstrom Corp. Method and apparatus for gasifying carbonaceous material. 4,799,937, Cl. 48-62.00R.
Nifco Inc.: *See*—
Kimizawa, Toshihide, 4,799,288, Cl. 16-2.000.
Sato, Youji, 4,799,334, Cl. 49-493.000.
Nihon Bunko Kogyo Kabushiki Kaisya: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.
Nihon Metal Gasket Kabushiki Kaisha: *See*—
Yoshino, Nobuo, 4,799,695, Cl. 277-231.000.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.
Nihon Taisanbin Kogyo Kabushiki Kaisha: *See*—
Miyagi, Hiroshi; and Ohno, Akihiko, 4,799,947, Cl. 65-158.000.
Nimmersjo, Gunnar, to ASEA Aktiebolag. Detection of high resistance faults in electrical power supply network. 4,800,509, Cl. 364-492.000.
Nintendo Co., Ltd.: *See*—
Nakagawa, Katsuya, 4,799,635, Cl. 364-900.000.
Nippon Air Brake Co., Ltd.: *See*—
Iwaizako, Akihiro; Nishii, Hiroshi; and Maruta, Seiki, 4,799,740, Cl. 303-15.000.
Nippon Ceramic Co., Ltd.: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.
Nippon Hoso Kyokai: *See*—
Murakami, Keinosuke; Enami, Kazumasa; and Yagi, Nobuyuki, 4,800,430, Cl. 358-160.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.
Nippon Mining Co., Ltd.: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.
Nippon Seiko Kabushiki Kaisha: *See*—
Seki, Takahiro, 4,799,806, Cl. 384-45.000.
Nippon Steel Corporation: *See*—
Oka, Tomoki; Kihira, Hiroshi; Matsuoka, Kazumi; and Ito, Satoshi, 4,800,165, Cl. 436-6.000.
Nippon Thompson Co., Ltd.: *See*—
Tanaka, Kazuhiko, 4,799,803, Cl. 384-43.000.
Tanaka, Kazuhiko, 4,799,804, Cl. 384-44.000.
Tanaka, Kazuhiko, 4,799,805, Cl. 384-44.000.
Yokota, Yasunori, 4,799,302, Cl. 29-148.40C.
Nippondenso Co., Ltd.: *See*—
Honda, Minoru; Fukuta, Toshiaki; Yamaguchi, Akihide; and Ikuta, Kenzi, 4,799,470, Cl. 123-470.000.
Ina, Katsuhiro; Akiyama, Susumu; and Hirabayashi, Yuzi, 4,800,499, Cl. 364-431.030.
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.
Niranjan, Keshavan: *See*—
Davidson, John F.; Niranjan, Keshavan; and Pandit, Aniruddha B., 4,799,862, Cl. 416-242.000.
Nishigaki, Toru: *See*—
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, 4,800,483, Cl. 364-200.000.
Nishii, Hiroshi: *See*—
Iwaizako, Akihiro; Nishii, Hiroshi; and Maruta, Seiki, 4,799,740, Cl. 303-15.000.
Nishimu Electronics Industries Co., Inc.: *See*—
Harada, Koosuke; and Sakamoto, Hiroshi, 4,800,476, Cl. 363-16.000.
Nishimura, Akira: *See*—
Nomura, Yoshiharu; Aoki, Shigemasa; and Nishimura, Akira, 4,800,196, Cl. 514-159.000.
Nishimura, Takumi: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Nishimura, Yasunori, to Sharp Kabushiki Kaisha. Apparatus and method for detecting residual organic compounds. 4,800,282, Cl. 250-461.100.
Nishiyama, Toshio: *See*—
Takahashi, Yoshikazu; and Nishiyama, Toshio, 4,799,418, Cl. 91-449.000.
Niskala, Gary G., to Hughes Aircraft Company. Rotatable pick and place vacuum sense head for die bonding apparatus. 4,799,854, Cl. 414-737.000.
Niznik, Shelly S.: *See*—
Tymon, Thomas M.; and Niznik, Shelly S., 4,800,041, Cl. 252-378.00R.
NM Laser Products, Inc.: *See*—
Woodruff, David C., 4,799,767, Cl. 350-269.000.
Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, to Thomas Swan & Co., Ltd. Solidification of liquid films. 4,799,453, Cl. 118-665.000.
Nodo, Nicholas L. Firearm recoil attenuator and method. 4,799,324, Cl. 42-94.000.
Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Radiation image read-out apparatus. 4,800,276, Cl. 250-327.200.
Noguchi, Noboru: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Noguchi, Takeshi: *See*—
Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, 4,800,160, Cl. 435-177.000.
Noguchi, Toshiaki, to Olympus Optical Co., Ltd. Endoscope light source apparatus with a light emitting timing delaying circuit. 4,800,424, Cl. 358-98.000.
Nolan, Daniel A.: *See*—
Keck, Donald B.; Lyons, Donald R.; and Nolan, Daniel A., 4,799,949, Cl. 65-3.120.
Nolf, Jean M. E., to Raychem Corporation. Wall feedthrough. 4,799,689, Cl. 227-9.000.
Nomura, Yoshiharu; Aoki, Shigemasa; and Nishimura, Akira, to Earth Chemical Co., Ltd. Phenyl salicylate and benzyl salicylate as acaricidal agents. 4,800,196, Cl. 514-159.000.
Nomura, Yoshihisa: *See*—
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.
Noranda Inc.: *See*—
Peacey, John G.; and Harris, G. Bryn, 4,800,003, Cl. 204-70.000.
Norcross Corporation: *See*—
Norcross, Robert A., Jr., 4,800,290, Cl. 307-43.000.
Norcross, Robert A., Jr., to Norcross Corporation. Control circuitry. 4,800,290, Cl. 307-43.000.
Nordica S.P.A.: *See*—
Baggio, Giorgio; and De Bortoli, Giuseppe, 4,799,297, Cl. 24-68.0SK.
Nordson Corporation: *See*—
Takada, Koichiro, 4,800,102, Cl. 427-197.000.
Noro, Teruo: *See*—
Itagaki, Teruo; and Noro, Teruo, 4,800,563, Cl. 371-13.000.
Norris, Philip R., to Polaroid Corporation. Method and apparatus for feeding card. 4,800,551, Cl. 369-77.100.
Northern Telecom Limited: *See*—
Donovan, Paul G., 4,799,659, Cl. 269-289.00R.
Hicks, Gregory F., 4,800,562, Cl. 371-5.000.
Kupferschmidt, Albert, 4,800,587, Cl. 379-437.000.
Northrop Corporation: *See*—
Hayward, William C., 4,800,299, Cl. 307-308.000.
Norwich Eaton Pharmaceuticals, Inc.: *See*—
Moorehead, Thomas J.; and Bayless, Allan V., 4,800,194, Cl. 514-89.000.
Nossek, Josef A.; Sebald, Georg; Lankl, Berthold; and Boshold, Klaus, to Siemens Aktiengesellschaft. Adapter frequency range equalizer for digital radio relay systems. 4,800,572, Cl. 375-14.000.
Novosel, David; and Campardo, Giovanni, to SGS Microelecttronica spa. Source bias generator for natural transistors in MOS digital integrated circuits. 4,800,297, Cl. 307-296.00R.
Nowell, Homer. Earthquake triggered gas valve. 4,799,505, Cl. 137-38.000.
Nozaki, Tatsuya: *See*—
Suzuki, Shigeaki; and Nozaki, Tatsuya, 4,800,254, Cl. 235-380.000.
NP Marketing Corporation: *See*—
Van Gompel, James; and Hall, Jerry A., 4,799,840, Cl. 410-42.000.
Ntl. Inst. of Agrobiological Resources: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.
Nuclear Packaging, Inc.: *See*—
Craig, Philip A.; Haelsig, Richard T.; Kent, John D.; and Schmoker, Duane S., 4,800,062, Cl. 376-272.000.
Nudd, Hugh R.: *See*—
Rampalli, Sitaram; and Nudd, Hugh R., 4,800,351, Cl. 333-237.000.
O&K Orenstein & Koppel Aktiengesellschaft: *See*—
Binder, Ulrich, 4,799,595, Cl. 209-135.000.

Oberto, Massimo, to Ing. C. Olivetti & C., S.p.A. Device for damping the oscillations of a stepping motor. 4,800,306, Cl. 310-51.000.

Obligio, Luis E., to Omranco International Corporation. Amusement device having controlled explosive surfaces. 4,799,666, Cl. 272-8.00N.

Obram, Hugo A. Reflex mounting assemblies for a basketball goal. 4,799,679, Cl. 273-1.50R.

Obrig, Hans W.: *See*—
Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, 4,799,839, Cl. 409-244.000.

Oce-Nederland B.V.: *See*—
Cox, Jan. J. F. M.; and Ensing, Hendrik, 4,800,337, Cl. 324-455.000.

Ochab, Douglas C. Weight lifting safety device. 4,799,674, Cl. 272-123.000.

O'Connor, James E., to Phillips Petroleum Company. Fiber reinforced thermoplastic articles and process for the preparation thereof. 4,800,113, Cl. 428-175.000.

Oda, Kazuya: *See*—
Kaneko, Kiyotaka; Oda, Kazuya; Takahashi, Kimihide; and Miyake, Izumi, 4,800,448, Cl. 360-35.100.

Oda, Masaaki: *See*—
Yamamoto, Takashi; Mishina, Yoshihiko; and Oda, Masaaki, 4,799,761, Cl. 350-96.310.

Office National d'Etudes et de Recherches Aerospatiales: *See*—
Bernard, Alain; and Touboul, Pierre, 4,799,386, Cl. 73-517.00B.

Ogawa, Kikuo; and Kimura, Kikuo, to Yazaki Corporation. Function-preset wiring device for automobiles. 4,799,893, Cl. 439-76.000.

Ogawa, Shigeru: *See*—
Miyoshi, Motosuke; Okumura, Katsuya; and Ogawa, Shigeru, 4,800,268, Cl. 250-234.000.

Ogilvie Mills, Inc.: *See*—
Morris, Charles; and Bateson, George, 4,800,097, Cl. 426-632.000.

Ogino, Yoshitaka: *See*—
Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, 4,800,482, Cl. 364-140.000.

Ogura, Mitsugi: *See*—
Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, 4,800,530, Cl. 365-189.000.

Ohfusa, Masaatsu, to Yoshida Kogyo K. K. Woven slide fastener stringer. 4,799,515, Cl. 139-384.00B.

Ohkura, Yosuke, to Tosoh Corporation. Quinoxalinone derivatives and analytical method using said compounds. 4,800,223, Cl. 544-354.000.

Ohnaka, Hidemi: *See*—
Shibata, Yoshiaki; and Ohnaka, Hidemi, 4,799,466, Cl. 123-327.000.

Ohno, Akihiko: *See*—
Miyagi, Hiroshi; and Ohno, Akihiko, 4,799,947, Cl. 65-158.000.

Ohnuki, Ichiro: *See*—
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.

Ohshima, Atsumi: *See*—
Nakatani, Toshio; and Ohshima, Atsumi, 4,799,442, Cl. 112-262.200.

Ohta, Toshihiko; Okada, Fujio; and Hayashi, Masahiro, to Toyo Boseki Kabushiki Kaisha. Drawn polyethylene filament tensile member. 4,800,121, Cl. 428-364.000.

Ohtaka, Keiji: *See*—
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.

Ohuchi, Kazunori: *See*—
Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, 4,800,530, Cl. 365-189.000.

Ohwa, Nobutaka: *See*—
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.

Oinaga, Yuji: *See*—
Tanaka, Tsutomu; and Oinaga, Yuji, 4,800,490, Cl. 364-200.000.

Oka, Seiji, to Ricoh Company, Ltd. Toner cartridge. 4,799,608, Cl. 222-505.000.

Oka, Seiji: *See*—
Tanaka, Masaru; and Oka, Seiji, 4,800,411, Cl. 355-3.0DD.

Oka, Tomoki; Kihira, Hiroshi; Matsuoka, Kazumi; and Ito, Satoshi, to Nippon Steel Corporation. Method of detecting corrosion rate of member of steel material. 4,800,165, Cl. 436-6.000.

Okada, Fujio: *See*—
Ohta, Toshihiko; Okada, Fujio; and Hayashi, Masahiro, 4,800,121, Cl. 428-364.000.

Okada, Kozo, to Tokyo Keiki Company, Ltd. Apparatus for measuring pulse compression ratio. 4,800,388, Cl. 342-194.000.

Okada, Shinjiro; and Kanbe, Junichiro, to Canon Kabushiki Kaisha. Driving method for liquid crystal device. 4,800,382, Cl. 340-784.000.

Okamoto, Yoshio: *See*—
Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, 4,800,034, Cl. 252-56.00S.

Okamura Corporation: *See*—
Arase, Akira; and Wada, Ichiro, 4,799,843, Cl. 414-331.000.
Yamazaki, Kouichi, 4,799,732, Cl. 297-300.000.

Okano, Jun-ichi; and Matsumoto, Kiyohito, to Kabushiki Kaisha Toshiba. Manufacturing method for cascaded junction field effect transistor. 4,800,172, Cl. 437-51.000.

Okauchi, Shigeki; and Uehara, Tsukasa, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus adapted for utilization of record bearing media of a disc type. 4,800,453, Cl. 360-99.020.

Okazaki, Masaki; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,800,154, Cl. 430-570.000.

Okazaki, Yoichiro: *See*—
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.

O'Kelley, Charles. Farrowing crate creep feeder. 4,799,455, Cl. 119-51.00R.

Okita, Tsutomu, to Fuji Photo Film Co., Ltd. Recording sheet bonded to a substrate in a magnetic disk. 4,800,458, Cl. 360-135.000.

Okojima, Sumio; and Yuhara, Yukitomo, to Yoshida Industry Co., Ltd. Vanity case. 4,799,604, Cl. 220-260.000.

Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, to Ricoh Company, Ltd. Printer paper bail device. 4,799,814, Cl. 400-639.100.

Okuma, Takanori: *See*—
Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, 4,799,565, Cl. 180-69.400.

Okumura, Katsuya: *See*—
Miyoshi, Motosuke; Okumura, Katsuya; and Ogawa, Shigeru, 4,800,268, Cl. 250-234.000.

Okuno, Akiyasu; Watanabe, Masakazu; and Ikoma, Kazuhiko, to NGK Spark Plug Co., Ltd. Composite layer aluminum nitride base sintered body. 4,800,137, Cl. 428-698.000.

Oldach, Detlef W. K.: *See*—
Johanndeiter, Martin H.; and Oldach, Detlef W. K., 4,800,428, Cl. 358-142.000.

Oldring, Peter K. T.: *See*—
Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, 4,799,453, Cl. 118-665.000.

O'Lenick, A. J., Jr.; and Smith, Wayne C., to GAF Corporation. Guerbet quaternary compounds. 4,800,077, Cl. 424-70.000.

Olin Corporation: *See*—
Mahulikar, Deepak; and Shapiro, Eugene, 4,799,973, Cl. 148-435.000.
Rothgery, Eugene F.; and Manke, Steven A., 4,800,232, Cl. 564-227.000.

Olsen, Sharon M.: *See*—
Sallavanti, Robert A.; Dalton, Jeffrey L.; and Olsen, Sharon M., 4,800,122, Cl. 428-412.000.

Olson, Dennis: *See*—
Freda, Gerald; Bogacz, Joseph; Freda, Joseph; and Olson, Dennis, 4,800,094, Cl. 426-513.000.

Olson, Jay H.: *See*—
Ankum, Robert H.; and Olson, Jay H., 4,799,291, Cl. 16-259.000.

Olympus Optical Co., Ltd.: *See*—
Hakamatsuka, Yasuharu; and Watanabe, Kazuhiro, 4,799,887, Cl. 433-212.100.
Horikawa, Yoshiaki, 4,800,269, Cl. 250-234.000.
Hosoya, Takamasa, 4,800,437, Cl. 358-244.000.
Musha, Toshimitsu, 4,799,796, Cl. 356-336.000.
Noguchi, Toshiaki, 4,800,424, Cl. 358-98.000.
Takayama, Syuichi, 4,799,482, Cl. 128-328.000.
Ueda, Yasuhiro, 4,799,474, Cl. 128-4.000.

Omni Signal, Inc.: *See*—
Husmann, Robert J., 4,800,366, Cl. 340-524.000.

Omori, Shunji: *See*—
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.

Omranco International Corporation: *See*—
Obligio, Luis E., 4,799,666, Cl. 272-8.00N.

Omron Tateisi Electronics Co.: *See*—
Takagi, Hiroshi, 4,800,493, Cl. 364-405.000.

Onchi, Yoshiaki: *See*—
Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, 4,800,362, Cl. 340-78.000.

Ono, Yuichi: *See*—
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, 4,800,565, Cl. 372-45.000.

Onoda Cement Company Limited: *See*—
Kawasaki, Masaki; and Mizukami, Kunio, 4,800,184, Cl. 501-140.000.

Onuki, Kazuhiko: *See*—
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, 4,800,413, Cl. 355-45.000.

Ooshima, Shinichi: *See*—
Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, 4,800,321, Cl. 313-639.000.

Ootsuka, Hiroshi: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

Oppawsky, Steffen: *See*—
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.

Oprisi, Mike V.: *See*—
Villoch, Joe D.; Gatto, Claudio U.; and Oprisi, Mike V., 4,799,527, Cl. 160-168.100.

Optron Systems, Inc.: *See*—
Dillon, Robert F.; and Warde, Cardinal, 4,800,263, Cl. 250-213.00R.

Orizio Paolo S.p.A.: *See*—
Bertagnoii, Leopoldo, 4,799,366, Cl. 66-219.000.

Ortolani, Carlo: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

Osawa, Masami: *See*—
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Maruta, Akinori, 4,800,134, Cl. 428-626.000.

Osawa, Tatsuo: *See*—
Fukai, Yoshio; Takagi, Hitoshi; and Osawa, Tatsuo, 4,799,640, Cl. 248-559.000.

Osawa, Yasuhisa; and Kimura, Yasuko, to Fuji Rubber Co. Limited. Contactor rubber. 4,800,243, Cl. 200-514.000.

Osborn, Nathan W.: *See*—
Rodal, David R.; and Osborn, Nathan W., 4,800,450, Cl. 360-73.060.

Oscarsson, Johnny, to Svenska Rotor Maskiner AB. Intermittent service screw compressor. 4,799,865, Cl. 417-283.000.

Oskar Frech GmbH & Co.: *See*—
Fink, Roland; and Klingenstein, Walter, 4,799,624, Cl. 239-412.000.

Ota, Masakatsu: *See*—
Echizen, Hiroshi; Ota, Masakatsu; and Suzuki, Akiyoshi, 4,799,791, Cl. 356-121.000.

Oteco Equipment Company: *See*—
Kujawa, Harry F.; and Hinderer, Nelson A., 4,799,716, Cl. 285-334.200.

Otis Elevator Company: *See*—
Wisner, George R., 4,800,368, Cl. 340-567.000.

Otis Engineering Corporation: *See*—
Clapp, Timothy D.; and McCormick, William H., 4,799,554, Cl. 166-312.000.

Ott, Rudi; and Reith, Heribert, to Robert Bosch GmbH. Method and apparatus for continuously galvanizing flat workpieces, and especially printed circuit boards. 4,800,001, Cl. 204-15.000.

Otterstedt, Jan-Erik: *See*—
Elvin, Frank J.; Otterstedt, Jan-Erik; and Yoo, Jin S., 4,800,185, Cl. 502-26.000.

Otto, Dennis L., to Timken Company, The. Compact seal. 4,799,808, Cl. 384-481.000.

OTV (Omnium de Traitements et de Valorisation): *See*—
Desbos, Gilbert, 4,800,021, Cl. 210-605.000.

Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, to Nippon Kokan Kabushiki Kaisha; and Nippon Mining Co., Ltd. Method for producing beta type titanium alloy materials having excellent strength and elongation. 4,799,975, Cl. 148-12.70B.

Ouhadi, Trazollah: *See*—
Broze, Guy; and Ouhadi, Trazollah, 4,800,035, Cl. 252-99.000.

Outboard Marine Corporation: *See*—
Broughton, George L.; Rogers, Duane E.; and Mate, David W., 4,799,905, Cl. 440-89.000.

Ovens, Kevin M.; Maxey, Jay A.; and Greenberg, Craig B., to Texas Instruments Incorporated. Metastable defeating fli-flop. 4,800,296, Cl. 307-291.000.

Owechko, Yuri: *See*—
Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, 4,800,519, Cl. 364-822.000.

Owens-Illinois Television Products Inc.: *See*—
Rapp, James E., 4,800,175, Cl. 437-160.000.

Oxley Developments Company Limited: *See*—
Morris, Michael; and Vickers, John, 4,799,958, Cl. 106-1.120.

Oy Tampella AB: *See*—
Rimpi, Pertti, 4,799,994, Cl. 162-29.000.

Ozaki, Katsuhiko: *See*—
Kumasaka, Taiichi; Hirano, Yasuyuki; Ozaki, Katsuhiko; and Sawada, Koichi, 4,799,416, Cl. 83-397.000.

Ozaki, Masaharu; and Yonehara, Takao, to Canon Kabushiki Kaisha. Semiconductor memory device. 4,800,527, Cl. 365-182.000.

Ozawa, Kazuhisa: *See*—
Mogi, Hiroyuki; and Ozawa, Kazuhisa, 4,799,897, Cl. 439-264.000.

Ozen Corporation: *See*—
Koike, Eishi, 4,800,305, Cl. 369-67.000.

Pa pay, Jozsef: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.

Paal, Tibor: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.

Pacific Kenyon Corp.: *See*—
Sawhill, J. Wallace, 4,800,088, Cl. 426-69.000.

Pacific Monolithics: *See*—
Podell, Allen F.; and Benton, Robert H., 4,800,345, Cl. 333-111.000.

Palmer, Christopher J.: *See*—
Atkin, Howard S.; and Palmer, Christopher J., 4,799,539, Cl. 165-54.000.

Panagiotou, George N., to Cool Lux Lighting Industries, Inc. Portable electric light. 4,800,475, Cl. 362-294.000.

Pandit, Aniruddha B.: *See*—
Davidson, John F.; Niranjan, Keshavan; and Pandit, Aniruddha B., 4,799,862, Cl. 416-242.000.

Pangaea Enterprises, Inc.: *See*—
Curlett, Harry B., 4,799,544, Cl. 166-65.100.

Pao, Cheng K.: *See*—
Chen, James C.; Wong, Wah S.; and Pao, Cheng K., 4,800,420, Cl. 357-76.000.

Papalos, John G., to Diamond Shamrock Chemical Company. Phosphated acrylates of alkoxylated alcohols. 4,800,229, Cl. 558-92.000.

Pappas, Daniel S., to United States of America, Energy. Fusion pumped laser. 4,800,566, Cl. 372-73.000.

Papst, Georg, to Papst-Motoren GmbH. Replaceable circuit board mounting system in outer rotor motors. 4,800,307, Cl. 310-67.00R.

Papst-Motoren GmbH: *See*—
Papst, Georg, 4,800,307, Cl. 310-67.00R.

Park Dental Research Corp.: *See*—
Wimmer, Joachim, 4,799,886, Cl. 433-176.000.

Parker, Valery: *See*—
Reed, Charles F.; and Parker, Valery, 4,799,696, Cl. 279-50.000.

Parkes, Steven M.: *See*—
Barnett, Ronnie D.; and Parkes, Steven M., 4,800,432, Cl. 358-160.000.

Parries, Paul C.: *See*—
Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., 4,799,990, Cl. 156-636.000.

Parrish, Frederick W.; and Serota, Samuel, to United States of America, Agriculture. Process for converting alpha to beta-lactose. 4,799,966, Cl. 127-63.000.

Parry, Christopher S.: *See*—
Collins, Malcolm G.; and Parry, Christopher S., 4,799,306, Cl. 29-453.000.

Paseri, Jacques: *See*—
Bonneau, Alian; and Paseri, Jacques, 4,799,792, Cl. 356-124.000.

Passmore, Paul R.; and Nance, William A., to Refraction Technology, Inc. Method of and systems for seismic exploration. 4,800,538, Cl. 367-55.000.

Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., to Toledo Stamping & Manufacturing Company; and General Motors Corporation. Boat-type rocker arm assembly. 4,799,464, Cl. 123-90.410.

Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH: *See*—
Haug, Joachim, 4,799,518, Cl. 140-71.500.

Paterson, James L.: *See*—
Rao, Kalipatnam V.; Mitchell, Allan T.; and Paterson, James L., 4,799,992, Cl. 156-643.000.

Pathfinder Systems, Inc.: *See*—
Nichols, Mark A., 4,800,558, Cl. 370-67.000.

Patil, Mallanagouda D.: *See*—
Lachman, Irwin M.; and Patil, Mallanagouda D., 4,800,187, Cl. 502-64.000.

Patrikios, Michael: *See*—
Welter, Curtis; Coto, Guillermo; and Patrikios, Michael, 4,799,614, Cl. 228-1.100.

Paugh, James J., Jr.; and Hinckley, Charles J., to Warren Pumps, Inc. Pump. 4,799,861, Cl. 416-186.00R.

Paul, Nikhil C.: *See*—
Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., 4,799,853, Cl. 414-730.000.

Paulsen, Steven L. Lure with skirt of pliable filaments. 4,799,329, Cl. 43-42.280.

PCB Piezotronics, Inc.: *See*—
Lally, Richard W., 4,799,375, Cl. 73-12.000.

Peacey, John G.; and Harris, G. Bryn, to Noranda Inc. Production of magnesium metal from magnesium containing materials. 4,800,003, Cl. 204-70.000.

Peake, Roy P., to Cox & Wright Limited. Relating to the repetitive cutting of workpiece blanks. 4,799,411, Cl. 83-50.000.

Pearson, Norman R.; Bartley, Shannon L.; and Kleschick, William A., to Dow Chemical Company, The. Herbicidal imidazolo(1,2-a)pyrimidine-2-sulfonanilides. 4,799,952, Cl. 71-92.000.

Peleckis, Anthony J., to Bead Chain Manufacturing Co. Resilient electronic bandolier carrier strip and method of using the same. 4,799,589, Cl. 206-330.000.

Pelley, Perry H., III: *See*—
Dehganpour, Sam; and Pelley, Perry H., III, 4,800,531, Cl. 365-222.000.

Pelonis, Kosta. AC power control. 4,800,330, Cl. 323-243.000.

Pennington, Keith S.: *See*—
Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., 4,800,397, Cl. 346-1.100.

Pennison, Robert A.; and Biek, Paul A., to Dresser Industries, Inc. Clutch for positive feed drill. 4,799,833, Cl. 408-132.000.

Pennwalt Corporation: *See*—
Bloomfield, Philip E.; Ferren, Richard A.; and Wickwire, Dean H., 4,800,048, Cl. 264-22.000.
Toukan, Sameeh S., 4,800,028, Cl. 252-25.000.

Perbos, Jean-Luc: *See*—
Charlier, Jean; Geenen, Bernard; Laurent, Bernard; Lorsignol, Jean; Malherbe, Andre; and Perbos, Jean-Luc, 4,800,556, Cl. 370-3.000.

Periou, Pierre, to Rockwell-CIM. Linear device for rapidly adjusting and immobilizing a movable part relative to a fixed part. 4,799,734, Cl. 297-361.000.

Perkins, Benjamin F., Jr., to Technical Equipment Associates of Florida, Inc. Rescue apparatus. 4,799,906, Cl. 441-85.000.

Perkins, Geoffrey W., to Motorola, Inc. Auto sync polarity control circuit for use with monitor. 4,800,429, Cl. 358-148.000.

Perrotta, Giorgio; and Losquadro, Giacinto, to Selenia Spazio S.p.A. Concatenated code-decode system for the protection against interference of digital transmissions through an intermediate regenerative repeater. 4,800,570, Cl. 375-4.000.

Perry, Robert A. System for NO reduction using sublimation of cyanuric acid. 4,800,068, Cl. 422-173.000.

Perthus, Peter: *See*—
Lindae, Gerhard; Loewe, Richard; and Perthus, Peter, 4,800,467, Cl. 362-61.000.

Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, to A. Menarini s.a.s. (Benzofuran-2-yl)imidazoles having pharmaceutical activity, their salts and relevant production processes. 4,800,208, Cl. 514-397.000.

Peters, Donald L., to Phillips Petroleum Company. Blow molding apparatus. 4,799,876, Cl. 425-536.000.

Peters, Josephus A. M., to Drukker International B.V. Method of making a diamond heat sink. 4,800,002, Cl. 204-15.000.

Peters, Rex B.: *See—*
Hulsing, Rand H.; and Peters, Rex B., 4,799,385, Cl. 73-505.000.

Petershofer, Georg: *See—*
Pflug, Guenther; and Petershofer, Georg, 4,800,111, Cl. 428-121.000.

Peterson, Richard L.: *See—*
Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., 4,799,392, Cl. 73-865.900.

Petitto, Angelo A.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,799,850, Cl. 414-687.000.

Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., to Petitto Mine Equipment, Inc. Material handling vehicle for use in a mine. 4,799,850, Cl. 414-687.000.

Petitto, James L.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,799,850, Cl. 414-687.000.

Petitto Mine Equipment, Inc.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,799,850, Cl. 414-687.000.

Pfizenmaier, Wolfgang, to Heidelberger Druckmaschinen AG. Device for feeding a paper web to a cross cutter. 4,799,660, Cl. 270-21.100.

Pflug, Guenther; and Petershofer, Georg, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Deformable resin laminate sheet. 4,800,111, Cl. 428-121.000.

Pham, Lien-Huong T.: *See—*
McAllister, Jerome W.; Pham, Lien-Huong T.; and Sowman, Harold G., 4,800,180, Cl. 501-88.000.

Phillips, Bradway F. Secondary ion mass spectrometer. 4,800,273, Cl. 250-288.000.

Phillips, Paul M. Apparatus for shaving elongate metal stock. 4,799,300, Cl. 29-33.00F.

Phillips Petroleum Company: *See—*
Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., 4,800,014, Cl. 208-157.000.
Matson, Michael S., 4,800,227, Cl. 548-543.000.
Mumallah, Naim A.; and Doe, Peter H., 4,799,548, Cl. 166-288.000.
O'Connor, James E., 4,800,113, Cl. 428-175.000.
Peters, Donald L., 4,799,876, Cl. 425-536.000.
Wu, Yulin, 4,799,553, Cl. 166-310.000.

Photo Engineering International S.R.L.: *See—*
Signoretto, Roberto, 4,800,406, Cl. 354-105.000.

Physicians' Pharmaceutical Services, Inc.: *See—*
Biava, Richard D.; and Whelan, Andrew J., 4,799,712, Cl. 282-1.00A.

Physio-Control Corporation: *See—*
Smith, Robert F., 4,800,495, Cl. 364-413.030.

Pialet, Joseph W.: *See—*
DiBiase, Stephen A.; and Pialet, Joseph W., 4,800,031, Cl. 252-47.500.

Pichant, Patrick: *See—*
Fourez, Michel; Lonca, Michel; and Pichant, Patrick, 4,799,959, Cl. 106-1.160.

Pichot, Mark A.: *See—*
Weldon, William F.; Gully, John H.; and Pichot, Mark A., 4,800,311, Cl. 310-178.000.

Pickell, John M., to Acco Babcock Inc. Self-adjusting cable control device. 4,799,400, Cl. 74-502.600.

Piejko, Karl-Erwin: *See—*
Bomer, Bruno; and Piejko, Karl-Erwin, 4,800,169, Cl. 436-166.000.

Pieper, Friedrich: *See—*
Friese, Hans-Herbert; Pieper, Friedrich; and Bosse, Reinhard, 4,800,045, Cl. 260-400.000.

Pierce, James M., Jr.; and Mallard, Jerry F., to Burlington Industries, Inc. Method and apparatus for grading fabrics. 4,800,503, Cl. 364-470.000.

Pietzcker, Dirk. Heat exchanger. 4,799,540, Cl. 165-76.000.

Pilling Co.: *See—*
Furey, Andrew J.; and Rosenwald, Frederic P., 4,799,485, Cl. 128-11.000.

Pintsov, Leon A.: *See—*
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.

Pioneer Electronic Corporation: *See—*
Ishii, Tsuneo, 4,800,452, Cl. 360-78.140.
Kanamaru, Hitoshi, 4,800,446, Cl. 358-343.000.
Kanda, Masao, 4,800,445, Cl. 358-342.000.
Sugai, Yoshiro; and Kimura, Hiroyuki, 4,800,434, Cl. 358-190.000.
Yamauchi, Keiichi, 4,800,550, Cl. 369-59.000.

Piper, Robert J.: *See—*
Homann, Helmut F.; and Piper, Robert J., 4,800,394, Cl. 343-882.000.

Pipik, Albert M. Baseball runner pads. 4,799,681, Cl. 273-25.000.

Pirc, Douglas J. Adapter having transient suppression protection. 4,799,901, Cl. 439-620.000.

Pischtschan, Alfred: *See—*
Eichenauer, Herbert; and Pischtschan, Alfred, 4,800,216, Cl. 525-285.000.

Pitney Bowes Inc.: *See—*
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; and Schmidt, Alfred C., 4,800,506, Cl. 364-478.000.
Durst, Robert T., Jr.; and Schmidt, Alfred C., 4,800,504, Cl. 364-478.000.
Marzullo, Joseph H., 4,799,989, Cl. 156-442.100.

Plantholt, Martin, to Deutsche Thomson-Brandt GmbH. Method of compatibly increasing resolution in a color television system. 4,800,427, Cl. 358-141.000.

Platt Saco Lowell Corporation: *See—*
Benfield, Dan W., 4,799,295, Cl. 19-159.00R.

Plessey Overseas Limited: *See—*
Jackson, Thomas, 4,800,342, Cl. 331-10.000.

Ploog, Uwe: *See—*
Friese, Hans-Herbert; Ploog, Uwe; and Prinz, Wolfgang, 4,799,932, Cl. 8-94.230.

Plueddemann, Edwin P., to Dow Corning Corporation. Coupling agent compositions. 4,800,125, Cl. 428-405.000.

Pluth, John, Jr.: *See—*
Lake, Ralph J., Jr.; Wiley, Franklyn L.; Coby, A. Daniel; and Pluth, John, Jr., 4,800,402, Cl. 346-139.00R.

Podd, Victor T. Bulkhead and lining systems for cargo containers. 4,799,607, Cl. 222-94.000.

Podell, Allen F.; and Benton, Robert H., to Pacific Monolithics. Spiral hybrid coupler. 4,800,345, Cl. 333-111.000.

Podhorniak, Gary S.: *See—*
Nickels, Richard C., Jr.; and Podhorniak, Gary S., 4,800,357, Cl. 336-198.000.

Pohl, Peter, to Siemens Aktiengesellschaft. Adaptor for a light waveguide plug connector. 4,799,758, Cl. 350-96.20R.

Polaert, Remy; and Schorter, Bruno, to U.S. Philips Corp. Television system with improved temporal resolution on display of a television signal. 4,800,436, Cl. 358-232.000.

Polar Spring Corporation: *See—*
Chang, Chung N., 4,799,945, Cl. 62-532.000.

Polaroid Corporation: *See—*
Douglas, Lawrence M., 4,800,400, Cl. 346-107.00R.
Johnson, Bruce K.; and Whiteside, George D., 4,800,405, Cl. 354-86.000.
Norris, Philip R., 4,800,551, Cl. 369-77.100.
Weber, Karl, 4,799,781, Cl. 351-86.000.

Poletto, Vanni: *See—*
Siligoni, Marco; and Poletto, Vanni, 4,800,589, Cl. 379-413.000.

Ponce, Felix C. Door holder and electrical carpenter's aid. 4,799,658, Cl. 269-133.000.

Pony Industries, Inc.: *See—*
Bibaeff, John A., 4,800,025, Cl. 210-703.000.

Poorman, Thomas J., to Western Atlas International, Inc. Fiber optic sensor with light sampling for referencing. 4,800,266, Cl. 250-227.000.

Portman, Joseph L., Jr.; and Margraf, David J., to Alcor, Inc. Piezoelectric viscometer. 4,799,378, Cl. 73-54.000.

Poster, Thomas J., Jr., to GTE Products Corporation. Telephone network interface system. 4,800,588, Cl. 379-412.000.

Poteet, John H. Flood alarm. 4,800,372, Cl. 340-625.000.

Potts, Alan, to MMD Design and Consultancy Limited. Mineral sizers. 4,799,627, Cl. 241-236.000.

Poullain, Jean: *See—*
Marcon, Charles; and Poullain, Jean, 4,799,372, Cl. 72-102.000.

Pozzi, Mauro: *See—*
Appiano, Silvano; Chiarottino, Wolmer; Pozzi, Mauro; and Reali, Aldo, 4,800,423, Cl. 358-21.00R.

PPG Industries, Inc.: *See—*
Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., 4,799,963, Cl. 106-287.130.

Precision Castparts Corp.: *See—*
Sturgis, David H.; and Kemp, William W., 4,799,530, Cl. 164-5.000.

Precision Image Corporation: *See—*
Day, Gene F., 4,799,452, Cl. 118-645.000.

Predecki, Paul K.: *See—*
Retallick, William B.; and Predecki, Paul K., 4,799,360, Cl. 62-48.000.

Preformed Line Products Company: *See—*
Goetter, Erwin H., 4,799,757, Cl. 350-96.200.

Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co.: *See—*
Bauer, Karl-Heinz; Eckert, Gerold; and Maidhof, Rudiger, 4,800,466, Cl. 362-26.000.

Prieser, Gunter: *See—*
Dinkel, Emil; Mann, Bernd; Prieser, Gunter; and Schneyer, Gerhard, 4,799,403, Cl. 74-788.000.

Prime Computer, Inc.: *See—*
Bupp, James H., 4,800,479, Cl. 363-48.000.

Prince, Gregory; Chanock, Robert; and Hemming, Val G., to United States of America, Health and Human Services. Immunotherapeutic method of treating respiratory disease by intranasal administration of Igb. 4,800,078, Cl. 424-86.000.

Prinz, Thomas K.; and Dier, Stephen A., to TRW Inc. Method of making a valve sleeve. 4,799,303, Cl. 29-157.10R.

Prinz, Wolfgang: *See*—
Friese, Hans-Herbert; Ploog, Uwe; and Prinz, Wolfgang. 4,799,932, Cl. 8-94.230.
Procter & Gamble Company, The: *See*—
Coffindaffer, Timothy W.; and Wong, Louis F., 4,800,026, Cl. 252-8.800.
Prokasky, Detlef: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.
Pruftechnik Dieter Busch & Partner GmbH & Co.: *See*—
Busch, Dieter, 4,800,512, Cl. 364-551.010.
Puder, Allen T.: *See*—
Strong, Michael R.; Puder, Allen T.; and Wieck, Ronald W., 4,799,377, Cl. 73-40.000.
Puskarich, Peter. Roll-tractor splitter. 4,799,656, Cl. 269-17.000.
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., to Snap-on Tools Corporation. Digital engine analyzer. 4,800,378, Cl. 340-722.000.
Pyi, Hwa-Sheng: *See*—
Asghar, Safdar M.; Pyi, Hwa-Sheng; and Dunnion, Dermot, 4,800,517, Cl. 364-757.000.
Pyles, Robert A.: *See*—
Hathaway, Susan J.; and Pyles, Robert A., 4,800,218, Cl. 525-433.000.
Pynn, John N.: *See*—
Transue, James A.; Pynn, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., 4,799,481, Cl. 128-325.000.
Quellette, Charles W.: *See*—
Meyerhoff, Shirley B.; and Quellette, Charles W., 4,799,825, Cl. 405-188.000.
Quinby, Thomas C., to United States of America, Energy. Method for producing refractory nitrides. 4,800,183, Cl. 501-96.000.
Quinn, Robert O.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.
R. P. Scherer Corporation: *See*—
Hom, Foo S.; and Ebert, William R., 4,800,083, Cl. 424-457.000.
Raab, Eberhard: *See*—
Reichardt, Manfred; and Raab, Eberhard, 4,799,891, Cl. 439-43.000.
Rabe, Jurgen, to INA Walzlager Schaeffler KG. Method of producing a novel structural element. 4,800,057, Cl. 264-229.000.
Racal Data Communications, Inc.: *See*—
Miller, William J., 4,800,518, Cl. 364-819.000.
Radic Co., Ltd.: *See*—
Yamazaki, Nobuyoshi, 4,800,385, Cl. 340-854.000.
Radixx/World Ltd.: *See*—
Luckanuck, John S., 4,799,349, Cl. 52-809.000.
Radomyshelsky, Leonid: *See*—
Medvinsky, Boris; and Radomyshelsky, Leonid, 4,799,999, Cl. 204-1.00T.
Rafferty, George A., Jr.: *See*—
Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., 4,799,495, Cl. 128-754.000.
Ralston Purina Company: *See*—
Hogan, William C.; and Gierhart, Dennis O., 4,800,093, Cl. 426-46.000.
Rampalli, Sitaram; and Nudd, Hugh R., to Andrew Corporation. Radiating coaxial cable with improved flame retardancy. 4,800,351, Cl. 333-237.000.
Ramsay, Michael: *See*—
Lowenthal, Richard W.; Reeber, Larke E.; Hoffman, Drew S.; and Ramsay, Michael, 4,800,380, Cl. 340-750.000.
Ramsbro, Borje, to System 3R International ab. Dowel-like apparatus for locating a component on a reference part. 4,799,841, Cl. 411-55.000.
Ramtron Corporation: *See*—
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., 4,800,543, Cl. 368-10.000.
Ramun, John R., to Allied Gator, Inc. Self-contained demolition bucket attachment. 4,799,852, Cl. 414-724.000.
Ranco Incorporated: *See*—
Gillett, Jimmie D., 4,800,292, Cl. 307-117.000.
Raney, Gary L.: *See*—
Corn, Kruger C.; and Raney, Gary L., 4,800,539, Cl. 367-72.000.
Rango, Joseph F. Golf putter including divot repair device. 4,799,684, Cl. 273-162.00F.
Rankin, E. Edward: *See*—
Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., 4,799,546, Cl. 166-250.000.
Rao, Kalipatnam V.; Mitchell, Allan T.; and Paterson, James L., to Texas Instruments Incorporated. Interlevel dielectric fabrication process. 4,799,992, Cl. 156-643.000.
Rapp, James E., to Owens-Illinois Television Products Inc. Phosphorous planar dopant source for low temperature applications. 4,800,175, Cl. 437-160.000.
Rasmussen, Donald D. Connector for releasable securement to the free end of a lifting strap. 4,799,296, Cl. 24-68.00R.
Rau, Gunter: *See*—
Knoch, Martin; Reul, Helmut; and Rau, Gunter, 4,799,930, Cl. 623-2.000.
Rauma-Repola Oy: *See*—
Hotma, Johan J. K., 4,799,425, Cl. 100-194.000.
Rausch, John J., to Fansteel Inc. Graded multiphase oxycarburized and oxycarbonitrided material systems. 4,799,977, Cl. 148-317.000.
Rawlinson, Stephen J.: *See*—
Si, Stephen S. C.; Lee, H. P. Sherman; and Rawlinson, Stephen J., 4,800,516, Cl. 364-748.000.
Raychem Corporation: *See*—
Kleiner, Lothar; and Matthiesen, Martin, 4,800,253, Cl. 219-553.000.
Nolf, Jean M. E., 4,799,689, Cl. 227-9.000.
Rayner, Adrien P.: *See*—
Collins, Malcolm G.; and Rayner, Adrien P., 4,799,602, Cl. 220-307.000.
Rea, Larry B.: *See*—
Lassiter, Perry B.; and Rea, Larry B., 4,800,181, Cl. 501-89.000.
Reali, Aldo: *See*—
Appiano, Silvano; Chiarottino, Wolmer; Pozzi, Mauro; and Reali, Aldo, 4,800,423, Cl. 358-21.00R.
Recchia, Joanne: *See*—
Horn, Marcus J.; and Recchia, Joanne, 4,800,166, Cl. 436-55.000.
Reck, Andrew C.: *See*—
Vesce, Richard V.; and Reck, Andrew C., 4,800,331, Cl. 323-277.000.
Reeber, Larke E.: *See*—
Lowenthal, Richard W.; Reeber, Larke E.; Hoffman, Drew S.; and Ramsay, Michael, 4,800,380, Cl. 340-750.000.
Reed, Bradley O., to General Electric Company. Extended range hydromechanical steering transmission. 4,799,401, Cl. 74-677.000.
Reed, Charles F.; and Parker, Valery, to Dover Industries, Inc. Chuck closing mechanism for automatic screw machine. 4,799,696, Cl. 279-50.000.
Reed, David J.: *See*—
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,800,421, Cl. 357-80.000.
Reed, John W.; and Smith, Richard D., to West Point Pepperell. Compositions and methods for imparting stain resistance to textile articles. 4,800,118, Cl. 428-270.000.
Reed, Russell, Jr. Multifunctional polyalkylene oxide binders. 4,799,980, Cl. 149-19.400.
Rees, Daniel E.: *See*—
Edward, Brian J.; Lang, Richard J.; and Rees, Daniel E., 4,800,393, Cl. 343-821.000.
Reeves, John R., to Wausau Metals Corporation. Blind with light-transmitting slats. 4,799,526, Cl. 160-168.100.
Refraction Technology, Inc.: *See*—
Passmore, Paul R.; and Nance, William A., 4,800,538, Cl. 367-55.000.
Reger, Philip R.; and Dobbins, Bob M., to Mars Electronics. Radar apparatus. 4,800,389, Cl. 342-175.000.
Reichardt, Manfred; and Raab, Eberhard, to Amphenol Corporation. Dual-contacting apparatus for chip-cards. 4,799,891, Cl. 439-43.000.
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., to Tech Research, Inc. Anchor apparatus for a tendon in prestressed concrete slab. 4,799,307, Cl. 29-452.000.
Reigstad, Hanley S.: *See*—
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,799,307, Cl. 29-452.000.
Reinauer, Thomas V.: *See*—
Giusti, Giambattista; Reinauer, Thomas V.; and DeHont, Raymond J., 4,799,943, Cl. 55-308.000.
Reinecke, Paul: *See*—
Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, 4,800,202, Cl. 514-227.000.
Reith, Heribert: *See*—
Ott, Rudi; and Reith, Heribert, 4,800,001, Cl. 204-15.000.
Reith, Johann-Stephan. Method and apparatus for shielding cargoes from condensate. 4,799,621, Cl. 237-2.00A.
Rekers, Karl, to Dipl.-Ing. Karl Rekers Maschinenbau, Firma. Gripping device. 4,799,724, Cl. 294-87.260.
Relder, Edward J., to Varo, Inc. Image intensifier tube with integral CCD digital readout. 4,799,911, Cl. 445-14.000.
Rellick, Joseph R., to Du Pont de Nemours, E. I., and Company. Method for fabricating multilayer circuits. 4,799,984, Cl. 156-89.000.
Rericha, Brian F.: *See*—
Stritzke, Bernard G.; and Rericha, Brian F., 4,799,691, Cl. 277-12.000.
Retallick, William B.; and Predecki, Paul K., to Retallick, William B. Method of binding a metal hydride to a surface. 4,799,360, Cl. 62-48.000.
Reul, Helmut: *See*—
Knoch, Martin; Reul, Helmut; and Rau, Gunter, 4,799,930, Cl. 623-2.000.
Rhone Poulenc, Inc.: *See*—
Gradeff, Peter S.; and Schreiber, Fred G., 4,800,072, Cl. 423-396.000.
Rhone-Poulenc Specialites Chimique: *See*—
Vinot, Bernard; Berrod, Gerard; and Brun, Jean-Louis, 4,799,549, Cl. 166-293.000.
Rias, Jean-Claude, to Isover Saint-Gobain. Process for packaging panels of a compressible material and the packages produced by this process. 4,799,350, Cl. 53-399.000.
Ribba, Alain, to Manufacture de Produits Chimiques Protex. Cross-linked carboxylic copolymers usable as thickeners in aqueous media and preparation thereof. 4,800,220, Cl. 526-238.230.
Ricci, Donato L. Portable end preparation apparatus. 4,799,409, Cl. 82-4.00C.

Richards, Edward. Landing attachment to aircraft for amphibious landing. 4,799,630, Cl. 244-101.000.
Richardson-Vicks Inc.: *See*—
Kowcz, Alexandra; and Doughty, Darrell G., 4,800,197, Cl. 514-162.000.
Richland Industries: *See*—
Sullins, Harry P., 4,799,987, Cl. 156-425.000.
Richter, Klaus-Peter: *See*—
Jadamus, Hans; and Richter, Klaus-Peter, 4,800,120, Cl. 428-286.000.
Rickner, Thomas W. Auxiliary towel rack shelves. 4,799,432, Cl. 211-105.100.
Ricoh Company, Ltd.: *See*—
Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, 4,800,398, Cl. 346-75.000.
Oka, Seiji, 4,799,608, Cl. 222-505.000.
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.
Tanaka, Masaru; and Oka, Seiji, 4,800,411, Cl. 355-3.0DD.
Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, 4,800,574, Cl. 375-26.000.
Riedweg, Robert: *See*—
Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, 4,799,922, Cl. 604-74.000.
Rigal, Jean-Pierre, to Salomon S.A. Apparatus for adapting a conventional template for use in mounting bindings to a monoski. 4,799,655, Cl. 269-2.000.
Riley, Brian, to Combustion Engineering, Inc. Process of forming conductive oxide layers in solid oxide fuel cells. 4,799,936, Cl. 29-623.100.
Riley, James W., II. Apparatus for measuring knee laxity. 4,799,497, Cl. 128-774.000.
Riley, Keith. Clamps. 4,799,639, Cl. 248-228.000.
Rimpi, Pertti, to Oy Tampella AB. Process for cooking and bleaching pulp. 4,799,994, Cl. 162-29.000.
Ringle, Terrance W.: *See*—
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., 4,799,811, Cl. 400-279.000.
Riseman, Jean M., executrix: *See*—
Riseman, John H., deceased; Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., 4,800,442, Cl. 358-280.000.
Riseman, John H., deceased (by Riseman, Jean M., executrix); Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., to Canon Kabushiki Kaisha. Apparatus for generating an image from a digital video signal. 4,800,442, Cl. 358-280.000.
Rivi Establishment: *See*—
Steixner, Fritz, 4,800,252, Cl. 219-306.000.
Rizza, Michael C. Reversible compression seal. 4,799,345, Cl. 52-396.000.
Robbins Auto Top Co., Inc.: *See*—
Robbins, Mark R.; Robbins, Douglas W.; and Agosta, Roy P., 4,799,727, Cl. 296-107.000.
Robbins, Douglas W.: *See*—
Robbins, Mark R.; Robbins, Douglas W.; and Agosta, Roy P., 4,799,727, Cl. 296-107.000.
Robbins, Mark R.; Robbins, Douglas W.; and Agosta, Roy P., to Robbins Auto Top Co., Inc. Folding automobile convertible top and rear window assembly having a flexible hinge. 4,799,727, Cl. 296-107.000.
Robert Bosch GmbH: *See*—
Lindae, Gerhard; Loewe, Richard; and Perthus, Peter, 4,800,467, Cl. 362-61.000.
Ott, Rudi; and Reith, Heribert, 4,800,001, Cl. 204-15.000.
Robertshaw Controls Company: *See*—
Scott, Douglas R.; Goddard, Peggy L.; and Wagner, Joseph P., 4,799,301, Cl. 29-25.350.
Robinson, Donald G.: *See*—
Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., 4,800,071, Cl. 423-321.00R.
Robinson, Ralph L.: *See*—
Steward, Eugene A.; and Robinson, Ralph L., 4,800,502, Cl. 364-467.000.
Rockwell-CIM: *See*—
Periou, Pierre, 4,799,734, Cl. 297-361.000.
Rockwell International Corporation: *See*—
Mahoney, Murray W.; and Ghosh, Amit K., 4,799,974, Cl. 148-12.70A.
Rodal, David R.; and Osborn, Nathan W., to Ampex Corporation. Method and apparatus for controlling deployment of a tape transport member. 4,800,450, Cl. 360-73.060.
Rodgers, E. Walter; and Rodgers, Lenual E., Jr. Fuse panel mounting plate. 4,800,465, Cl. 361-432.000.
Rodgers, Lenual E., Jr.: *See*—
Rodgers, E. Walter; and Rodgers, Lenual E., Jr., 4,800,465, Cl. 361-432.000.
Roe, James E.: *See*—
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,800,099, Cl. 426-641.000.
Roesgen, John P., to Analog Devices, Inc. Modulo address generator. 4,800,524, Cl. 364-900.000.
Roestenberg, Jerome R. Method for shaping a molding compound applied to a surface for modifying the surface. 4,800,054, Cl. 264-86.000.
Rogers, Duane E.: *See*—
Broughton, George L.; Rogers, Duane E.; and Mate, David W., 4,799,905, Cl. 440-89.000.
Rolando de Alvare, Louis: *See*—
Allen, Robert J.; Rolando de Alvare, Louis; and Spence, Floyd G., 4,800,043, Cl. 260-391.000.
Rollett, Marius, to Society said: ROVIP. Valve for a gas cylinder or the like. 4,799,646, Cl. 251-88.000.
ROLLS-ROYCE plc: *See*—
Midgley, Ronald A., 4,799,354, Cl. 60-39.142.
Romanowski, William E.; and Suljak, George T., to International Fuel Cells Corporation. Separation of gaseous hydrogen from a water-hydrogen mixture in a fuel cell power system operating in a weightless environment. 4,800,138, Cl. 429-19.000.
Roos, Mark D.; and Messmer, Walter J., III, to EIP Microwave, Inc. Modular shielding assembly for electronic devices. 4,800,464, Cl. 361-424.000.
Roper, Jerry M., to Ethyl Corporation. Preparation of alpha-cyanophenoxybenzyl esters. 4,800,230, Cl. 558-388.000.
Rosar, George C.; and Clifford, David G., Jr., to Motorola, Inc. Adjustable electronic filter and method of tuning same. 4,800,348, Cl. 333-202.000.
Rose, Gene D.; Teot, Arthur S.; and Foster, Kenneth L., to Dow Chemical Company, The. Aqueous bleach compositions thickened with a viscoelastic surfactant. 4,800,036, Cl. 252-102.000.
Rosenberg, Richard C.: *See*—
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.
Rosenblatt, Richard. Aspirator for collection of bodily fluids. 4,799,924, Cl. 604-181.000.
Rosenblatt, Richard. Aspirator for collection of bodily fluids. 4,799,925, Cl. 604-181.000.
Rosenfeld, Samuel, deceased: *See*—
Rosenfield, Gerson J.; Rosenfeld, Samuel, deceased; and Rosenfield, Rhoda, executrix, 4,800,005, Cl. 204-109.000.
Rosenfield, Gerson J.; Rosenfeld, Samuel, deceased; and Rosenfield, Rhoda, executrix. Treatment plant for recovery of metal from hazardous waste. 4,800,005, Cl. 204-109.000.
Rosenfield, Rhoda, executrix: *See*—
Rosenfield, Gerson J.; Rosenfeld, Samuel, deceased; and Rosenfield, Rhoda, executrix, 4,800,005, Cl. 204-109.000.
Rosenwald, Frederic P.: *See*—
Furey, Andrew J.; and Rosenwald, Frederic P., 4,799,485, Cl. 128-11.000.
Rosenwinkel, Donald A.: *See*—
Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., 4,799,678, Cl. 273-1.00E.
Rothgery, Eugene F.; and Manke, Steven A., to Olin Corporation. Process for producing triaminoguanidine nitrate and the high melting point product ao produced. 4,800,232, Cl. 564-227.000.
Roy, Kathleen A.: *See*—
Karbowski, Robert J.; Erickson, Anita S.; Gartner, Charles D.; and Roy, Kathleen A., 4,800,082, Cl. 424-409.000.
Roy Soderqvist Mekaniska Verkstad AB: *See*—
Soderqvist, Ulf, 4,799,413, Cl. 83-71.000.
RT/Katek Communications Group, Inc.: *See*—
Wright, George A., 4,799,642, Cl. 248-516.000.
Rubicon Co., Ltd.: *See*—
Miyamoto, Yoshikazu, 4,799,407, Cl. 81-58.300.
Rubin, Berl I. Power driven vacuum sweeper. 4,799,286, Cl. 15-361.000.
Rufer, Alfred-Christophe: *See*—
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, 4,800,481, Cl. 363-70.000.
Ruprecht, David R.: *See*—
Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., 4,800,053, Cl. 264-83.000.
Russell Corporation: *See*—
Adamson, Fletcher D., 4,799,613, Cl. 223-39.000.
Rutishauser Data AG: *See*—
Steinmetz, Rene, 4,799,813, Cl. 400-629.000.
Rutter, James D.: *See*—
Kutzli, Carl R.; and Rutter, James D., 4,799,586, Cl. 198-803.010.
Saad, William T.; and Medford, George F., to General Electric Company. Thermal shock resistant silicone coating composition. 4,800,127, Cl. 428-447.000.
Saar-Hartimetall und Werkzeuge GmbH: *See*—
Dittrich, Gerd, 4,800,536, Cl. 366-78.000.
Sadek, Kurt: *See*—
Meier, Otto; Sadek, Kurt; Sikoronja, Zvonko; and Schroder, Johann, 4,799,364, Cl. 62-342.000.
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Recording material. 4,800,193, Cl. 503-217.000.
Safir, Aran. Visual vertex finder. 4,799,784, Cl. 351-212.000.
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, to Canon Kabushiki Kaisha. Sheet feeding device. 4,799,662, Cl. 271-114.000.
Sahakian, V. K.: *See*—
Long, Jon; and Sahakian, V. K., 4,800,419, Cl. 357-70.000.
Saiki, Randall K.: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.
Saito, Hiroaki: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hirasoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.

Saito, Takashi: *See*—
Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, 4,800,482, Cl. 364-140.000.
Saito, Yoshio: *See*—
Shimai, Shunzo; Saito, Yoshio; Ando, Yawara; and Koseki, Takashi, 4,799,601, Cl. 220-21.00R.
Sakabe, Yukio: *See*—
Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, 4,800,459, Cl. 361-321.000.
Sakama, Mitsunori: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Sakamaki, Hiroshi; Horikoshi, Yukio; and Tanzawa, Kenji, to Eagle Industry Co., Ltd. Vane pump with brittle vanes and rough finished housing surface. 4,799,867, Cl. 418-1.000.
Sakamoto, Hiroshi: *See*—
Harada, Koosuke; and Sakamoto, Hiroshi, 4,800,476, Cl. 363-16.000.
Sakamoto, Masahide: *See*—
Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, 4,799,380, Cl. 73-116.000.
Sakamoto, Mitsuo: *See*—
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, 4,799,339, Cl. 52-1.000.
Sakata Denki Co., Ltd.: *See*—
Yamazaki, Nobuyoshi, 4,800,385, Cl. 340-854.000.
Sako, Yoichiro: *See*—
Yamagami, Tamotsu; and Sako, Yoichiro, 4,800,549, Cl. 369-56.000.
Sakuma, Yutaka: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.
Sakuyama, Hideo: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.
Salgo , Tamas, to Tungsram Reszvenytarsasag. Method and apparatus for producing discharge tubes for sodium vapor lamps. 4,799,912, Cl. 445-26.000.
Sallavanti, Robert A.; Dalton, Jeffrey L.; and Olsen, Sharon M., to Gentex Corporation. Siloxane-based tintable coating. 4,800,122, Cl. 428-412.000.
Salomon S.A.: *See*—
Rigal, Jean-Pierre, 4,799,655, Cl. 269-2.000.
Sanden Corporation: *See*—
Matsushita, Takashi, 4,799,578, Cl. 192-84.00C.
Sandstrom, Henry. Device for sweeper units. 4,799,281, Cl. 15-80.000.
Sandy, Joe M.: *See*—
Harris, Phillip C.; and Sandy, Joe M., 4,799,550, Cl. 166-300.000.
Sankin Kogyo Kabushiki Kaisha: *See*—
Yuhda, Sadayuki, 4,800,156, Cl. 435-296.000.
Sano, Kenji: *See*—
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, 4,800,146, Cl. 430-73.000.
Sanofi: *See*—
Blanda, Guy, 4,799,351, Cl. 53-446.000.
Santel, Hans-Joachim: *See*—
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Santrade Ltd.: *See*—
Stabler, Gerhard, 4,799,424, Cl. 100-154.000.
Sanwo, Ikuo J.; and Milby, Gregory H., to NCR Corporation. Frostless interface supercooled VLSI system. 4,800,422, Cl. 357-82.000.
Sanyo Electric Co., Ltd.: *See*—
Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, 4,799,968, Cl. 136-258.000.
Sapko, Michael J.; and Ward, Jack A., Jr., to United States of America, Interior. Determining inert content in coal dust/rock dust mixture. 4,799,799, Cl. 356-446.000.
Sarco Mfg. Co., Inc.: *See*—
Sardinskas, Robert A., 4,799,322, Cl. 40-1.500.
Sardinskas, Robert A., to Sarco Mfg. Co., Inc. Tangle resistant lock pin. 4,799,322, Cl. 40-1.500.
Sarson, Charles R., to Tuthill Corporation. Coupling assembly. 4,799,512, Cl. 137-614.040.
Sasaki, Kazuji, to Sony Corporation. Synchronizing detecting circuit for a digital broadcasting receiver. 4,800,578, Cl. 375-116.000.
Sasaki, Kenji: *See*—
Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, 4,799,353, Cl. 57-281.000.
Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, to Toyota Jidosha Kabushiki Kaisha. Organic solvent cleaning apparatus. 4,800,362, Cl. 340-78.000.
Satake, Toshihiko, to 501 Satake Engineering Co., Ltd. Measuring apparatus for amylose and/or amylopectin content in rice. 4,800,280, Cl. 250-339.000.
Sato, Fumitaka, to Kabushiki Kaisha Toshiba. Binary data compression and expansion processing apparatus. 4,800,441, Cl. 358-261.100.
Sato, Hideki; Komatsu, Teruo; and Sugiura, Yoshinori, to Canon Kabushiki Kaisha. Light scanning device for scanning with a laser beam and an image forming apparatus for forming an image with a laser beam. 4,800,401, Cl. 346-108.000.
Sato, Hideo: *See*—
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, 4,800,146, Cl. 430-73.000.
Sato, Kozo: *See*—
Harada, Toru; and Sato, Kozo, 4,800,148, Cl. 430-138.000.
Sato, Yoshihiko: *See*—
Yanagisawa, Naoki; and Sato, Yoshihiko, 4,799,465, Cl. 123-256.000.
Sato, Youji, to Nifco, Inc. Stabilizer for automobile door window glass. 4,799,334, Cl. 49-493.000.
Sato, Yuichi, to Canon Kabushiki Kaisha. Signal processing apparatus. 4,800,591, Cl. 382-50.000.
Satoh, Mitsuyoshi: *See*—
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.
Satomura, Masato: *See*—
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.
Satten, Michael I.: *See*—
Lehmann, Roger W.; and Satten, Michael I., 4,799,915, Cl. 446-279.000.
Savage, Edward C., to Xerox Corporation. Xerographic process without conventional cleaner. 4,800,147, Cl. 430-125.000.
Savas, Peter G.; Kiger, Virginia S.; and Boudreau, Ronald R., to Xydex Corporation. Piston filtering device. 4,800,020, Cl. 210-359.000.
Sawada, Koichi: *See*—
Kumasaka, Taiichi; Hirano, Yasuyuki; Ozaki, Katsuhiko; and Sawada, Koichi, 4,799,416, Cl. 83-397.000.
Sawhill, J. Wallace, to Pacific Kenyon Corp. Animal feed supplement with filler and method of preparing the same. 4,800,088, Cl. 426-69.000.
Scandiaconsult AB: *See*—
Westermark, Mats O. J., 4,799,941, Cl. 55-90.000.
Schacht, Eckhard; Velte, Dieter; Werner, Wolfgang; and Wolf, Albert, to Keramchemie GmbH. Chemical attack-resistant, liquid-tight lining. 4,800,128, Cl. 421-448.000.
Schaeffer, Thomas W. Rich fume incinerator. 4,799,878, Cl. 431-202.000.
Schaffner Manufacturing Company, Inc.: *See*—
Schaffner, William M., 4,799,338, Cl. 51-334.000.
Schaffner, William M., to Schaffner Manufacturing Company, Inc. Buffing wheel. 4,799,338, Cl. 51-334.000.
Schallner, Otto: *See*—
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Schally, Andrew V.; and Bajusz, Sandor. LHRH antagonists. 4,800,191, Cl. 514-15.000.
Scharf, Stephen J.: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.
Scheffer, Bruce A.; and Lo, Eric K., to Scheffer, Inc. Rotary cutter apparatus. 4,799,414, Cl. 83-103.000.
Scheffer, Inc.: *See*—
Scheffer, Bruce A.; and Lo, Eric K., 4,799,414, Cl. 83-103.000.
Schepers, Genesius J. J. M.: *See*—
Bakker, Age; Schepers, Genesius J. J. M.; and Koerts, Kees, 4,799,965, Cl. 127-46.200.
Scheuble, Bernhard: *See*—
Baur, Guter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 4,799,774, Cl. 350-346.000.
Scheurenbrand, Dieter: *See*—
Wawra, Helmut; Scheurenbrand, Dieter; and Kleineberg, Wolfgang, 4,799,509, Cl. 137-587.000.
Schick, Henry, to Gilbert Manufacturing Co. Fused plug. 4,799,898, Cl. 439-418.000.
Schill, Jurgen: *See*—
Bauer, Gerd H.; Gorisch, Armin; Hartmuller, Herbert; Meyer, Gerhard; Nicklas, Alexander; Prokasky, Detlef; and Schill, Jurgen, 4,799,857, Cl. 415-185.000.
Schlensog, Klaus: *See*—
Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, 4,799,922, Cl. 604-74.000.
Schleser, Werner: *See*—
Eschwey, Manfred; and Schleser, Werner, 4,800,189, Cl. 502-400.000.
Schlipp, Richard H.: *See*—
Dewberry, Larry S.; and Schlipp, Richard H., 4,799,293, Cl. 17-11.10R.
Schlumberger Systems and Services, Inc.: *See*—
Deering, Michael F., 4,800,431, Cl. 358-160.000.
Schlumberger Technology Corporation: *See*—
Barber, Thomas D.; Vandermeer, William B.; and Flanagan, William D., 4,800,496, Cl. 364-422.000.
Schmid, Gunter: *See*—
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.
Schmid, Richard G.: *See*—
Davila, Fernando E.; and Schmid, Richard G., 4,800,335, Cl. 324-158.00F.
Schmidt, Albert: *See*—
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Groach, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.

Schmidt, Alfred C.: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; and Schmidt, Alfred C., 4,800,506, Cl. 364-478.000.
Durst, Robert T., Jr.; and Schmidt, Alfred C., 4,800,504, Cl. 364-478.000.
Schmidt, Robert R.: *See*—
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.
Schmoker, Duane S.: *See*—
Craig, Philip A.; Haelsig, Richard T.; Kent, John D.; and Schmoker, Duane S., 4,800,062, Cl. 376-272.000.
Schmutz, Friedrich: *See*—
Mierswa, Christian; and Schmutz, Friedrich, 4,800,063, Cl. 376-316.000.
Schneider, Marvin; Blanco, Louis A.; and Milo, Salvatore A., to Commercial Decal, Inc. Microwave heating utensil. 4,800,247, Cl. 219-10.55E.
Schneider, Richard T.: *See*—
Keates, Richard H.; and Schneider, Richard T., 4,799,785, Cl. 351-212.000.
Schneyer, Gerhard: *See*—
Dinkel, Emil; Mann, Bernd; Prieser, Gunter; and Schneyer, Gerhard, 4,799,403, Cl. 74-788.000.
Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lau, Wan F., 4,800,198, Cl. 514-167.000.
Schockman, Robert L.: *See*—
Wissman, Terry L.; and Schockman, Robert L., 4,799,846, Cl. 413-66.000.
Schorter, Bruno: *See*—
Polaert, Remy; and Schorter, Bruno, 4,800,436, Cl. 358-232.000.
Schranz, Peter: *See*—
Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, 4,800,363, Cl. 340-310.00A.
Schreiber, Fred G.: *See*—
Gradeff, Peter S.; and Schreiber, Fred G., 4,800,072, Cl 423-396.000.
Schroder, Johann: *See*—
Meier, Otto; Sadek, Kurt; Sikoronja, Zvonko; and Schroder, Johann, 4,799,364, Cl. 62-342.000.
Schroer, Charles E.: *See*—
Knoedler, Roy E.; Morton, Kenneth P.; and Schroer, Charles E., 4,799,700, Cl. 280-87.051.
Schuierer, Manfred; and Koch, Werner, to Bruckner Apparatebau GmbH. Apparatus for the continuous wet treatment of a length of tubular material. 4,799,367, Cl. 68-13.00R.
Schuler, Dorland H., to Schuler MFG. & Equip. Co., Inc. Feed mixer. 4,799,800, Cl. 366-296.000.
Schuler MFG. & Equip. Co., Inc.: *See*—
Schuler, Dorland H., 4,799,800, Cl. 366-296.000.
Schulz, Manfred; Wagemann, Alfred; and Waldner, Gerhard, to Metabowerke GmbH & Co. Air-cooled rotor for electric motor. 4,800,315, Cl. 310-261.000.
Schuster, Gary B.: *See*—
Gottschalk, Peter; and Schuster, Gary B., 4,800,149, Cl. 430-138.000.
Schwarz, Edward L.; and Keel, Beat G., to Magnetic Peripherals Inc. Static charge protection for magnetic thin film data transducers. 4,800,454, Cl. 360-103.000.
Schwerzel, Wolfgang; and Kummerfeldt, Georg, to Licentia Patent-Verwaltunga-GmbH. System for displacement vector searching during digital image analysis. 4,800,425, Cl. 358-136.000.
Schwing, Friedrich: *See*—
Simnovec, Andrej; Meinken, Bernhard; and Schwing, Friedrich, 4,799,573, Cl. 182-2.000.
Scott, Douglas R.; Goddard, Peggy L.; and Wagner, Joseph P., to Robertshaw Controls Company. Method of making an oscillating crystal force transducer. 4,799,301, Cl. 29-25.350.
Scott, Gary M., to Warn Industries, Inc. Removable canopy cover. 4,799,726, Cl. 296-100.000.
Scott, George W. Packet with internal filter for coffee machines. 4,800,089, Cl. 426-78.000.
Scragg, Edgar P.; and Scragg, John E. Tank constructions for containing fuel, and water separators for fuel feed systems. 4,799,504, Cl. 137-38.000.
Scragg, John E.: *See*—
Scragg, Edgar P.; and Scragg, John E., 4,799,504, Cl. 137-38.000.
Searle, Jeffrey G., to STC PLC. Adaptive antenna arrays for frequency hopped systems. 4,800,390, Cl. 342-383.000.
Seasholtz, Craig A.: *See*—
Berfield, Robert C.; and Seasholtz, Craig A., 4,799,699, Cl. 280-79.500.
Seastone, James C.: *See*—
McDougall, Wallace R.; and Seastone, James C., 4,799,971, Cl. 148-12.00B.
Sebald, Georg: *See*—
Nosek, Josef A.; Sebald, Georg; Lankl, Berthold; and Boshold, Klaus, 4,800,572, Cl. 375-14.000.
Seiko Epson Corporation: *See*—
Kano, Nobuhiko; Aoyama, Akira; and Kunida, Shinobu, 4,800,112, Cl. 428-163.000.
Kato, Juri, 4,800,417, Cl. 357-59.000.
Seki, Takahiro, to Nippon Seiko Kabushiki Kaisha. Miniature linear guide apparatus. 4,799,806, Cl. 384-45.000.
Selenia Spazio S.p.A.: *See*—
Perrotta, Giorgio; and Losquadro, Giacinto, 4,800,570, Cl. 375-4.000.
Sell, James C., Jr.: *See*—
Strong, Michael R.; Sell, James C., Jr.; and Cimbalik, David J., 4,799,513, Cl. 137-625.480.
Selle, Robert: *See*—
Selle, Robert W., 4,799,673, Cl. 272-123.000.
Selle, Robert W., to Selle, Robert. Bench press safety apparatus. 4,799,673, Cl. 272-123.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Sepracor, Inc.: *See*—
Matson, Stephen L., 4,800,162, Cl. 435-280.000.
Serota, Samuel: *See*—
Parrish, Frederick W.; and Serota, Samuel, 4,799,966, Cl. 127-63.000.
Servolift/Eastern Corporation: *See*—
Vershbow, Daniel R., 4,799,606, Cl. 221-280.000.
Sewell, Robert A.: *See*—
Burgess, Michael J.; Sewell, Robert A.; and Clifford, David P., 4,800,195, Cl. 514-150.000.
Seymour Foods, Inc.: *See*—
Willsey, Charles H., 4,799,423, Cl. 99-500.000.
Seymour, William D. Multi-option shutter awning assembly. 4,799,525, Cl. 160-133.000.
SGS-ATES Componenti Elettronici S.p.A.: *See*—
Musemeci, Salvatore, 4,800,416, Cl. 357-34.000.
SGS Microelecttronica spa: *See*—
Novosel, David; and Campardo, Giovanni, 4,800,297, Cl. 307-296.00R.
SGS-Thomson Microelettronica S.p.A.: *See*—
Siligoni, Marco; and Poletto, Vanni, 4,800,589, Cl. 379-413.000.
Shah, Ashwin H.; Womack, Richard H.; and Wang, Chu-Ping, to Texas Instruments Incorporated. Dual ended folded bit line arrangement and addressing scheme. 4,800,525, Cl. 365-72.000.
Shallenberger, John M.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Tool for replacing locking screws in a nuclear fuel assembly. 4,799,312, Cl. 29-723.000.
Shallenberger, John M.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Apparatus for loading fuel rods into grids of nuclear fuel assemblies. 4,800,061, Cl. 376-261.000.
Shanghai Lamp Factory: *See*—
Ju-Zhen, Wang, 4,800,316, Cl. 310-327.000.
Shapiro, Eugene: *See*—
Mahulikar, Deepak; and Shapiro, Eugene, 4,799,973, Cl. 148-435.000.
Sharp Kabushiki Kaisha: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.
Nishimura, Yasunori, 4,800,282, Cl. 250-461.100.
Taniguchi, Koki, 4,799,771, Cl. 350-334.000.
Shell Oil Company: *See*—
Borchardt, John K., 4,799,547, Cl. 166-275.000.
Doering, Egon L., 4,799,356, Cl. 60-648.000.
Wang, Pen C., 4,800,231, Cl. 560-176.000.
Shepard, John S., to SISU Shelving Corporation. Shelf bracket. 4,799,643, Cl. 248-544.000.
Shepherd, James P., to Hoechst Celanese Corp. Method for supporting metalloporphyrins on polybenzimidazole porous articles. 4,800,188, Cl. 502-159.000.
Sheppard, John H.; and Moore, Jonathan D. Hydraulic exercising machines. 4,799,676, Cl. 272-130.000.
Shibata, Setsuo: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.
Shibata, Yoshiaki; and Ohnaka, Hidemi, to Toyota Jidosha Kabushiki Kaisha. Deceleration control device of an internal combustion engine. 4,799,466, Cl. 123-327.000.
Shibukawa, Takerou: *See*—
Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, 4,799,708, Cl. 280-796.000.
Shibuya, Mamoru: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.
Shick, Lawrence A., to Lifestyle International, Inc. Handle for bag. 4,799,521, Cl. 150-107.000.
Shida, Keizo: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.
Shigenaka, Toshinori; and Kusaka, Iwao, to Babcock Hitachi Kabushiki Kaisha. Waste heat recovery boiler. 4,799,461, Cl. 122-7.00R.
Shikichi, Satoshi; Aoki, Akio; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Optical information record/regenerating apparatus with device for prohibiting movement of optical head. 4,800,546, Cl. 369-44.000.
Shimada, Kazutoshi: *See*—
Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, 4,800,482, Cl. 364-140.000.

Shimada, Makoto, to Tachi-S Co., Ltd. Apparatus for manufacturing automotive seats. 4,799,988, Cl. 156-475.000.
Shimadzu Corporation: *See*—
Komoto, Akira, 4,799,561, Cl. 177-229.000.
Shimai, Shunzo; Saito, Yoshio; Ando, Yawara; and Koseki, Takashi, to Toshiba Ceramics Co., Ltd. Inslusent alumina ceramic tube and a process for making same. 4,799,601, Cl. 220-21.00R.
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha. Intermediate shift control apparatus for automatic transmission. 4,799,404, Cl. 74-869.000.
Shimizu, Isamu: *See*—
Kanai, Masahiro; Hanna, Junichi; and Shimizu, Isamu, 4,800,173, Cl. 37-081.000.
Shimizu, Masayuki; and Yoshikawa, Sumio, to Fuji Photo Film Co., Ltd. Heat-developing and transferring apparatus. 4,800,275, Cl. 250-317.100.
Shimizu, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Motor-operated power steering apparatus. 4,799,566, Cl. 180-79.100.
Shin-Chin, Shao, to Holmes Products Corp. Clip-on electric fan. 4,799,858, Cl. 416-110.000.
Shiraishi, Akira: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.
Shirakawa, Hiromu: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.
Shiroyanagi, Yoshiro: *See*—
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, 4,800,483, Cl. 364-200.000.
Shizuoka Seiki Co., Ltd.: *See*—
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.
Shoger, Kirk D.: *See*—
Tegeler, John J.; and Shoger, Kirk D., 4,800,200, Cl. 514-211.000.
Shoiket, Henry N.: *See*—
Simelunas, William J.; Shoiket, Henry N.; and Espejo, Celso, 4,799,583, Cl. 198-418.100.
Shop-Vac Corporation: *See*—
Berfield, Robert C., 4,799,285, Cl. 15-327.00R.
Berfield, Robert C.; and Seasholtz, Craig A., 4,799,699, Cl. 280-79.500.
Wacek, Rudolph W.; and Crevling, R. Lent, Jr., 4,800,312, Cl. 310-239.000.
Showa Aluminum Corporation: *See*—
Arai, Kozo; Suzuki, Takao; and Umetsu, Syozo, 4,800,133, Cl. 428-606.000.
Si, Stephen S. C.; Lee, H. P. Sherman; and Rawlinson, Stephen J., to Amdahl Corporation. High speed floating-point unit. 4,800,516, Cl. 364-748.000.
Sieber, Joseph: *See*—
Knopf, Ulrich C.; and Sieber, Joseph, 4,799,358, Cl. 62-3.000.
Siecor Corporation: *See*—
Beatty, Johnny W.; and DiMarco, Brian A., 4,799,760, Cl. 350-96.230.
Siedlecki, Walter F., Jr.; and Horst, Kenneth R., to General Electric Company. Cloud water measurement. 4,799,376, Cl. 73-29.000.
Siekermann, Volker: *See*—
Hausdorf, Jorg; Kandler, Joachim; and Siekermann, Volker, 4,799,967, Cl. 134-38.000.
Siemens Aktiengesellschaft: *See*—
Borner, Manfred; Muller, Reinhard; and Trommer, Gert, 4,799,749, Cl. 350-96.130.
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.
Nossek, Josef A.; Sebald, Georg; Lankl, Berthold; and Boshold, Klaus, 4,800,572, Cl. 375-14.000.
Pohl, Peter, 4,799,758, Cl. 350-96.20R.
Siemens Aktiengesellschaft & Balzers Aktiengesellschaft: *See*—
Krueger, Hans; and Good, Hans P., 4,800,568, Cl. 372-99.000.
Signoretto, Roberto, to Photo Engineering International S.R.L. Apparatus for creating and checking correlation between negatives and prints in photographic laboratories. 4,800,406, Cl. 354-105.000.
Sikora, Scott T., to Tomar Electronics, Inc. Single-ended self-oscillating dc-dc converter for intermittently energized load having V_{BE} responsive current limit circuit. 4,800,323, Cl. 315-219.000.
Sikoronja, Zvonko: *See*—
Meier, Otto; Sadek, Kurt; Sikoronja, Zvonko; and Schroder, Johann, 4,799,364, Cl. 62-342.000.
Silicon System, Ins.: *See*—
Maimone, Peter; and Yamasaki, Richard G., 4,800,340, Cl. 331-1.00A.
Siligoni, Marco; and Poletto, Vanni, to SGS-Thomson Microelettronica S.p.A. Voltage regulator control circuit for a subscriber line interface circuit. 4,800,589, Cl. 379-413.000.
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., to Chevron Research Company. Bacteria and its use in a microbial profile modification process. 4,799,545, Cl. 166-246.000.
Silverberg, Morton: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.
Silverstein, Louis D.; and Monty, Robert W., to Honeywell Inc. Four color repetitive sequence matrix array for flat panel displays. 4,800,375, Cl. 340-703.000.
Simelunas, William J.; Shoiket, Henry N.; and Espejo, Celso, to Nabisco Brands, Inc. Automatic direct soft cookie loading apparatus. 4,799,583, Cl. 198-418.100.
Simmons, Dana P., to Firmenich S.A. Cycloaliphatic aldehydes and process for the preparation thereof. 4,800,233, Cl. 568-447.000.
Simmons, John G.; and Taylor, Geoffrey W., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Bipolar inversion channel device. 4,800,415, Cl. 357-34.000.
Simmons, John J. Utilization of low rank coal and peat. 4,800,015, Cl. 208-180.000.
Simnovec, Andrej; Meinken, Bernhard; and Schwing, Friedrich, to Friedrich Wilh Schwing GmbH. Adjustable personnel platform. 4,799,573, Cl. 182-2.000.
Simpson-Davis, Raymon W.; and Bennett, Allan, to De La Rue Systems, Limited. Portable card-like article. 4,800,260, Cl. 235-487.000.
Simpson, John P.; Newman, Gary L.; Larnerd, James M.; and Emerick, Alan J., to International Business Machines Corporation. Solder leveling method and apparatus. 4,799,616, Cl. 228-125.000.
Sinclair, Richard G.; and Sowell, Sylvester, to Drackett Company, The. End of life indicator for automatic toilet cleaning devices. 4,800,066, Cl. 422-55.000.
Sinclair and Rush, Inc.: *See*—
Ventimiglia, Joseph J.; and Vatcha, Neville F., 4,800,116, Cl. 428-215.000.
Sip- Societa Italiana per L'Esercizio Delle Telecomunicazioni S.P.A.: *See*—
Appiano, Silvano; Chiarottino, Wolmer; Pozzi, Mauro; and Reali, Aldo, 4,800,423, Cl. 358-21.00R.
SISU Shelving Corporation: *See*—
Shepard, John S., 4,799,643, Cl. 248-544.000.
Sizova, Svetlana I.: *See*—
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg I.; and Sizova, Svetlana I., 4,799,919, Cl. 474-205.000.
Sjoerdsma, Albert, to Merrell Dow Pharmaceuticals Inc. Method of alleviating withdrawal symptoms. 4,800,209, Cl. 514-401.000.
SKF Industrial Trading & Development Co. B.V.: *See*—
Bras, Johan C. M., 4,799,574, Cl. 184-27.100.
SKF Nova AB: *See*—
Hallerback, Stig, 4,799,918, Cl. 474-161.000.
Slade, Charles E. Speed reducing signal. 4,800,377, Cl. 340-72.000.
Sladky, Hans. Heat exchanger with thin-film evaporator. 4,799,542, Cl. 165-118.000.
Smith, Daniel J.; and Furman, Dennis L., to Ethicon, Inc. Tapered I-beam surgical needles. 4,799,484, Cl. 128-339.000.
Smith, David R.: *See*—
Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., 4,799,811, Cl. 400-279.000.
Smith, Donald L.: *See*—
Capp, Randolph E.; Johnescu, Michael M.; Laudig, Ronald C.; Michael, George W.; and Smith, Donald L., 4,799,900, Cl. 439-585.000.
Laudig, Ronald C.; and Smith, Donald L., 4,799,902, Cl. 439-585.000.
Smith, John J.: *See*—
Riseman, John H., deceased; Smith, John J.; d'Entremont, Alice M.; and Goldman, Craig E., 4,800,442, Cl. 358-280.000.
Smith, Paul, to Beecham Group, p.l.c. Pharmacologically active hydrated azabicyclo compound. 4,800,225, Cl. 546-112.000.
Smith, Richard D.: *See*—
Reed, John W.; and Smith, Richard D., 4,800,118, Cl. 428-270.000.
Smith, Robert F., to Physio-Control Corporation. Method and apparatus for processing signals used in oximetry. 4,800,495, Cl. 364-413.030.
Smith, Steven M.: *See*—
D'Agosto, Nicholas A., III; Smith, Steven M.; and Jachmann, Emil F., 4,800,582, Cl. 379-216.000.
Smith, W. Novis, Jr.: *See*—
Bolton, Nelson P.; and Smith, W. Novis, Jr., 4,799,346, Cl. 52-509.000.
Smith, Wayne C.: *See*—
O'Lenick, A. J., Jr.; and Smith, Wayne C., 4,800,077, Cl. 424-70.000.
Smiths Industries Public Limited Company: *See*—
Mason, Ronald A., 4,799,787, Cl. 356-43.000.
Smolik, Klaus, to Helsa-Werke Helmut Sandler GmbH & Co. KG. Filter material and process for the production thereof. 4,800,190, Cl. 502-416.000.
Snap-on Tools Corporation: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.
Snijders, Wilfred A. M., to U.S. Philips Corporation. Arrangement for identifying peripheral apparatus such as work stations printers and such like, which can optionally be connected in geographically different locations to a communication network by means of local coupling units. 4,800,384, Cl. 340-825.520.
Societe Anonyme dite: L'Oreal: *See*—
Grollier, Jean-Francois; and Beauquey, Bernard, 4,800,080, Cl. 424-74.000.
Societe ATOCHEM: *See*—
Lantz, Andre ; and Michaud, Pascal, 4,800,234, Cl. 568-842.000.

Societe d'Etudes Techniques et d'Entreprises Generales - Sodeteg: *See—*
Bonneau, Alian; and Paseri, Jacques, 4,799,792, Cl. 356-124.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Lechon, Alain; and Le Luel, Yves, 4,799,816, Cl. 403-2.000.

Society said: ROVIP: *See—*
Rollett, Marius, 4,799,646, Cl. 251-88.000.

Soderqvist, Ulf, to Roy Soderqvist Mekaniska Verkstad AB. Cutting arrangement for intermittent cutting of web material. 4,799,413, Cl. 83-71.000.

Soffer, Bernard H.: *See—*
Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, 4,800,519, Cl. 364-822.000.

Solar Reactor Technologies, Inc.: *See—*
Hanrahan, Robert J.; and Gupta, Avinash K., 4,799,357, Cl. 60-673.000.

Solaronics Vaneecke: *See—*
Laspeyres, Marc, 4,799,879, Cl. 431-328.000.

Soloviev, Sergei A.: *See—*
Fedorov, Svyatoslav N.; Krutov, Sergei V.; Soloviev, Sergei A.; Alexandrova, Olga G.; and Korshunova, Nadezhda K., 4,799,478, Cl. 128-303.100.

Solvay & Cie.: *See—*
Detournay, Jean-Paul; and Cabaraux, Emile, 4,800,008, Cl. 204-253.000.

Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Doromboxi, Laszlo ; and Lukonits, Otto , to Tatabanyai Szenbanyak. Mining method for working large-scale mineral deposits by the caving system. 4,799,738, Cl. 299-11.000.

Sonnenfeld, Richard: *See—*
Hansma, Paul K.; and Sonnenfeld, Richard, 4,800,274, Cl. 250-306.000.

Sony Corporation: *See—*
Hori, Katsuya; and Furuya, Tsuneo, 4,800,515, Cl. 364-746.100.
Mikami, Tsutomu; and Kojima, Masaaki, 4,800,336, Cl. 324-426.000.
Sasaki, Kazuji, 4,800,578, Cl. 375-116.000.
Suga, Ryoichi; Nakagawa, Yutaka; and Watanabe, Yoshimi, 4,800,376, Cl. 340-721.000.
Yamagami, Tamotsu; and Sako, Yoichiro, 4,800,549, Cl. 369-56.000.

Sony-Tektronix, Inc.: *See—*
Konishi, Tomoo, 4,800,571, Cl. 375-10.000.

Southard, Robert K.: *See—*
Marzari, Robert L.; Southard, Robert K.; and Stape, William J., 4,800,265, Cl. 250-227.000.

Southwall Technologies, Inc.: *See—*
Meyer, Stephen F.; and Hood, Thomas G., 4,799,745, Cl. 350-1.700.

Sowell, Sylvester: *See—*
Sinclair, Richard G.; and Sowell, Sylvester, 4,800,066, Cl. 422-55.000.

Sowman, Harold G.: *See—*
McAllister, Jerome W.; Pham, Lien-Huong T.; and Sowman, Harold G., 4,800,180, Cl. 501-88.000.

SpaceLabs, Inc.: *See—*
Nelson, Craig H., 4,799,492, Cl. 128-672.000.

Sparks, Gregory E.: *See—*
Kramer, Kenneth D.; and Sparks, Gregory E., 4,799,645, Cl. 251-30.040.

Spears, J. Richard, to Beth Israel Hospital Association, The. Method and apparatus for angioplasty. 4,799,479, Cl. 128-303.100.

Spector, George: *See—*
Christian, Felicia M.; and Spector, George, 4,799,317, Cl. 33-565.000.

Spector, Richard H.: *See—*
Dillon, John L.; and Spector, Richard H., 4,800,226, Cl. 546-338.000.

Spence, Floyd G.: *See—*
Allen, Robert J.; Rolando de Alvare, Louis; and Spence, Floyd G., 4,800,043, Cl. 260-391.000.

Spencer & Co., Limited: *See—*
Dixon, George; and Eaves, Henry W., 4,799,944, Cl. 55-446.000.

Splane, Robson L., Jr.: *See—*
Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, 4,799,475, Cl. 128-25.00R.

Sprague, William B., Jr. Shock-absorbing pillow. 4,799,275, Cl. 5-431.000.

Sprunt, Eve S.; and Yale, David P., to Mobil Oil Corporation. Method for determining reservoir characteristics of a porous material. 4,799,382, Cl. 73-153.000.

Square D Company: *See—*
Yin, Simon, 4,800,460, Cl. 361-340.000.

Square D Research: *See—*
Yin, Simon, 4,800,242, Cl. 200-400.0RS.

SRI International: *See—*
Eckerle, Joseph S., 4,799,491, Cl. 128-672.000.

Stabler, Gerhard, to Santrade Ltd. Fluid seal for moving belts. 4,799,424, Cl. 100-154.000.

Stacey, Steven C.: *See—*
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.

Stadium Bags, Inc.: *See—*
Brown, John T., 4,799,731, Cl. 297-192.000.

Stainton, John E.: *See—*
Dunkley, Michael W.; and Stainton, John E., 4,800,360, Cl. 340-52.00R.

Stanley Electric Co., Ltd.: *See—*
Yokoyama, Sakae, 4,800,468, Cl. 362-61.000.

Stape, William J.: *See—*
Marzari, Robert L.; Southard, Robert K.; and Stape, William J., 4,800,265, Cl. 250-227.000.

State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, The: *See—*
Csonka, Paul L.; and Tatchyn, Roman O., 4,800,353, Cl. 335-210.000.

STC PLC: *See—*
Crossland, William A.; Davey, Anthony B.; and Bone, Matthew F., 4,799,775, Cl. 350-350.00S.
Searle, Jeffrey G., 4,800,390, Cl. 342-383.000.

Steel Casting Engineering, Ltd.: *See—*
Ahrens, Max; and Haissig, Manfred, 4,799,533, Cl. 164-137.000.
Kuttner, Ralph, 4,800,324, Cl. 318-293.000.

Steel Engineering Co., Ltd., The: *See—*
Foster, Bruce A.; and Hedges, Raymond, 4,799,556, Cl. 173-43.000.

Steele, David; and Bradford, Robert G., to Unisys Corporation. Document track work station. 4,800,259, Cl. 235-483.000.

Steele, Robert W.: *See—*
West, Raymond M.; and Steele, Robert W., 4,799,320, Cl. 37-80.00R.

Steinmetz, Rene, to Rutishauser Data AG. Coupling, especially for an apparatus for feeding recording carriers to the platen of an office machine and apparatus with such couplings. 4,799,813, Cl. 400-629.000.

Steixner, Fritz, to Rivi Establishment. Apparatus for heating liquid media by infrared irradiation. 4,800,252, Cl. 219-306.000.

Stemp, Geoffrey: *See—*
Evans, John M.; and Stemp, Geoffrey, 4,800,212, Cl. 514-424.000.

Steridose Systems: *See—*
Arthun, Nils; and Lofgren, Peter, 4,800,023, Cl. 210-644.000.

Sterling, Rodney D., to Hughes Aircraft Company. Liquid crystal light valve and associated bonding structure. 4,799,773, Cl. 350-342.000.

Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, to Bayer Aktiengesellschaft. 5-acylamino-pyrazole derivatives, composition containing them and herbicidal method of using them. 4,799,951, Cl. 71-92.000.

Stetter, Karl. Process for the non-cutting reshaping of metals, and lubricant compositions for this process. 4,800,033, Cl. 252-55.000.

Steward, Eugene A.; and Robinson, Ralph L., to Stewart, Eugene A.; and Robinson, Ralph L., part interest to each. Fare computer. 4,800,502, Cl. 364-467.000.

Stewart, Eugene A.: *See—*
Steward, Eugene A.; and Robinson, Ralph L., 4,800,502, Cl. 364-467.000.

Stoller, Arnold E.; and Stoller, John L. Orthodontic mirror image brackets to removably receive the end portions of lingual arch wires. 4,799,883, Cl. 433-17.000.

Stoller, John L.: *See—*
Stoller, Arnold E.; and Stoller, John L., 4,799,883, Cl. 433-17.000.

Stone, Kirby L.; Kneifel, R. W., II; and Brockman, John P., to Cincinnati Milacron Inc. Spool servo control for tape web positioning. 4,799,981, Cl. 156-64.000.

Stonefield Systems Plc.: *See—*
Considine, William H., 4,800,383, Cl. 340-825.790.

Strang, Harry: *See—*
Stetter, Jorg; Schallner, Otto; Gehring, Reinhold; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 4,799,951, Cl. 71-92.000.

Strasser, Ludwig: *See—*
Mueller, Rudolf; and Strasser, Ludwig, 4,799,703, Cl. 280-91.000.

Striker, David L.: *See—*
Cinzori, Carl; Williams, Carl, Jr.; Mitchell, Clair E.; and Striker, David L., 4,799,309, Cl. 29-596.000.

Stritzke, Bernard G.; and Rericha, Brian F., to Microdot Inc. Rear crankshaft seal housing with integrally bonded seal. 4,799,691, Cl. 277-12.000.

Strong, Michael R.; Puder, Allen T.; and Wieck, Ronald W., to Dow Corning Corporation. Detector for leaks or orifices. 4,799,377, Cl. 73-40.000.

Strong, Michael R.; Sell, James C., Jr.; and Cimbalik, David J., to Dow Corning Corporation. Multi-port valve. 4,799,513, Cl. 137-625.480.

Strosser, Richard P.: *See—*
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., 4,799,625, Cl. 241-30.000.

Structural Graphics, Inc.: *See—*
Crowell, Christopher S., 4,799,764, Cl. 350-162.180.

Stueben, Helmut: *See—*
Baymak, Faruk; and Stueben, Helmut, 4,799,632, Cl. 244-122.00R.

Sturgis, David H.; and Kemp, William W., to Precision Castparts Corp. Method for recovering casting refractory compositions from investment casting slurries. 4,799,530, Cl. 164-5.000.

Stutzman, Ralph C.: *See—*
Bhat, Gulgunji R.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 4,800,076, Cl. 424-69.000.

Suchy, Helmut, to Gyroteq Corporation. Physical exercise apparatus. 4,799,667, Cl. 272-36.000.

Suda, Yasuo: *See—*
Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, 4,800,410, Cl. 354-408.000.

Sudimak, Michael J.; and Cohn, Robert J., to InterMetro Industries Corp. System for mounting an item to a post. 4,799,818, Cl. 403-107.000.

Suenaga, Hiroyoshi: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.

Suga, Nagaichi, to Suga Test Instrumenets Co., Ltd. Apparatus for measuring the moisture content of snow particles. 4,799,379, Cl. 73-76.000.

Suga, Ryoichi; Nakagawa, Yutaka; and Watanabe, Yoshimi, to Sony Corporation. Multiple display system. 4,800,376, Cl. 340-721.000.

Suga Test Instrumenets Co., Ltd.: *See*—
Suga, Nagaichi, 4,799,379, Cl. 73-76.000.

Sugai, Yoshiro; and Kimura, Hiroyuki, to Pioneer Electronic Corporation. Power source for electronic tuning tuner. 4,800,434, Cl. 358-190.000.

Sugiura, Miyoji: *See*—
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.

Sugiura, Yoshinori: *See*—
Sato, Hideki; Komatsu, Teruo; and Sugiura, Yoshinori, 4,800,401, Cl. 346-108.000.

Sugiyama, Haruki: *See*—
Kuwabara, Youhei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.

Sugiyama, Takekatsu: *See*—
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.

Suisse, Richard A.: *See*—
Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., 4,799,437, Cl. 110-229.000.

Suljak, George T.: *See*—
Romanowski, William E.; and Suljak, George T., 4,800,138, Cl. 429-19.000.

Sullins, Harry P., to Richland Industries. Pipe turning apparatus. 4,799,987, Cl. 156-425.000.

Sulzer Brothers Limited: *See*—
Bucher, Robert, 4,799,517, Cl. 139-452.000.
Griffith, John D., 4,799,516, Cl. 139-435.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kakuta, Tatsuya; and Akasaka, Nobuhiro, 4,799,762, Cl. 350-96.340.
Koiso, Takashi; and Fujii, Satoshi, 4,799,970, Cl. 148-6.200.

Sumitomo Metal Industries, Ltd.: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.

Sunaga, Takashi: *See*—
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, 4,800,013, Cl. 208-19.000.

Sundstrand Data Control, Inc.: *See*—
Hulsing, Rand H.; and Peters, Rex B., 4,799,385, Cl. 73-505.000.

Superspine, Inc.: *See*—
Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, 4,799,475, Cl. 128-25.00R.

Surface Technologies, Inc.: *See*—
Kolar, Richard A., 4,800,119, Cl. 428-283.000.

Sutcliffe, Roger F., to Mill-Max MFg. Corp. Compliant tail connector. 4,799,904, Cl. 439-733.000.

Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, to Mitsubishi Gas Chemical Company, Inc. Plant growth regulating composition. 4,799,950, Cl. 71-89.000.

Suzuki, Akitoshi: *See*—
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.

Suzuki, Akiyoshi: *See*—
Echizen, Hiroshi; Ota, Masakatsu; and Suzuki, Akiyoshi, 4,799,791, Cl. 356-121.000.

Suzuki, Hitoshi: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.

Suzuki, Kazuhiro: *See*—
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.

Suzuki, Kazuo: *See*—
Waki, Tatsuo; Watanabe, Takeshi; and Suzuki, Kazuo, 4,800,214, Cl. 521-84.100.

Suzuki, Kenichi; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Information recording-reproducing apparatus. 4,800,258, Cl. 235-479.000.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Pressure switch. 4,800,244, Cl. 200-306.000.

Suzuki, Michiyuki: *See*—
Yamamoto, Tadashi; and Suzuki, Michiyuki, 4,799,531, Cl. 164-120.000.

Suzuki, Motoyuki; and Kikuchi, Kazuo, to Alps Electric Co., Ltd. Image scanner. 4,800,444, Cl. 358-294.000.

Suzuki, Shigeaki; and Nozaki, Tatsuya, to CDK Corporation; and Credix Corporation. Commodity information transmission system for on-line transaction network. 4,800,254, Cl. 235-380.000.

Suzuki, Takao: *See*—
Arai, Kozo; Suzuki, Takao; and Umetsu, Syozo, 4,800,133, Cl. 428-606.000.

Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, to Hitachi, Ltd.; and Hitachi Automotibe Engineering. Engine rotation speed detecting apparatus. 4,799,380, Cl. 73-116.000.

Suzuki, Yoshikazu: *See*—
Koshinaka, Osamu; and Suzuki, Yoshikazu, 4,799,439, Cl. 112-162.000.
Koshinaka, Osamu; Suzuki, Yoshikazu; and Yoneda, Yoshihide, 4,799,440, Cl. 112-162.000.

Svenska Rotor Maskiner AB: *See*—
Oscarsson, Johnny, 4,799,865, Cl. 417-283.000.

Swanson, William C. Level lift hydraulic valve. 4,799,851, Cl. 414-700.000.

Swarr, Thomas E.; and Trocciola, John C., to International Fuel Cells Corporation. Method of fabricating molten carbonate cathodes. 4,800,052, Cl. 264-65.000.

Swartz, Ralph E. Combination napkin and table setting holder. 4,800,108, Cl. 428-43.000.

Swoboda, Hellmuth, to Connec AG Systembau-Technik. Connector for profiled structural members. 4,799,819, Cl. 403-252.000.

Symons, Robert S., to Litton Systems, Inc. Broadband klystron cavity arrangement. 4,800,322, Cl. 315-5.390.

System 3R International ab: *See*—
Ramsbro, Borje, 4,799,841, Cl. 411-55.000.

Szittar, Antal: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.

Tabei, Ichiro: *See*—
Watanabe, Masaru; and Tabei, Ichiro, 4,799,628, Cl. 242-84.420.

Tachi-S Co., Ltd.: *See*—
Shimada, Makoto, 4,799,988, Cl. 156-475.000.

Tachikawa, Hiromichi: *See*—
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, 4,800,146, Cl. 430-73.000.

Tachita, Ryobun; Ikeda, Ken; and Teranishi, Akio, to Matsushita Electric Industrial Co., Ltd. GPS receiver. 4,800,577, Cl. 375-115.000.

Taga, Yukio, to Yoshida Kogyo K. K. Apparatus for assembling pairs of garment fastener elements. 4,799,611, Cl. 227-18.000.

Tahara, Tomio, to Kamaya Kagaku Kogyo Co., Ltd. Compact cosmetic case. 4,799,503, Cl. 220-260.000.

Tajima, Kenji; and Arai, Noboru, to Fuji Photo Film Co., Ltd. Sheet film package and method and device for loading sheet film. 4,799,591, Cl. 206-455.000.

Takada, Koichiro, to Nordson Corporation. Powder spraying or scattering apparatus and method. 4,800,102, Cl. 427-197.000.

Takagi, Hiroshi, to Omron Tateisi Electronics Co. Electronic cash register. 4,800,493, Cl. 364-405.000.

Takagi, Hitoshi: *See*—
Fukai, Yoshio; Takagi, Hitoshi; and Osawa, Tatsuo, 4,799,640, Cl. 248-559.000.

Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Circuit substrate having ceramic multilayer structure containing chip-like electronic components. 4,800,459, Cl. 361-321.000.

Takahashi, Isao, to Kabushiki Kaisha Toshiba. Method and apparatus for controlling PWM inverter. 4,800,478, Cl. 363-41.000.

Takahashi, Junichi; and Itoh, Yuji, to Canon Kabushiki Kaisha. Eye fundus camera. 4,799,783, Cl. 351-206.000.

Takahashi, Kenji: *See*—
Arakawa, Satoshi; Miyahara, Junji; and Takahashi, Kenji, 4,800,136, Cl. 428-690.000.

Takahashi, Kimihide: *See*—
Kaneko, Kiyotaka; Oda, Kazuya; Takahashi, Kimihide; and Miyake, Izumi, 4,800,448, Cl. 360-35.100.

Takahashi, Shigeo: *See*—
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, 4,799,404, Cl. 74-869.000.

Takahashi, Yoshikazu; and Nishiyama, Toshio, to Mitsuba Electric Mfg. Co., Ltd. Vacuum actuator for vehicle speed control. 4,799,418, Cl. 91-449.000.

Takahira, Nobuhiro: *See*—
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.

Takakuwa, Kazuo: *See*—
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.

Takano, Hiroshi: *See*—
Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, 4,800,310, Cl. 310-105.000.

Takano, Yoshihiro: *See*—
Kumai, Fumitaka; and Takano, Yoshihiro, 4,799,824, Cl. 405-146.000.

Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, to Zenyaku Kogyo Kabushiki Kaisha. 1,4-thiazine derivative, and cardiotonic agent comprising it as effective component. 4,800,201, Cl. 514-230.800.

Takashima, Masanobu: *See*—
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.

Takatori, Hideo: *See*—
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.

Takayama, Syuichi, to Olympus Optical Co., Ltd. Stone disintegrator apparatus. 4,799,482, Cl. 128-328.000.

Takechi, Moriaki; Watanabe, Tsugio; and Kuroda, Shigenori, to Mitsubishi Denki Kabushiki Kaisha. Electromagnet having magnetic shield. 4,800,355, Cl. 335-301.000.

Takeda Chemical Indus. Ltd.: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Takeda Chemical Industries, Ltd.: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.

Takeda, Katsuhiko, to Minolta Camera Kabushiki Kaisha. Magnification varying device for electro-photographic copying machine. 4,800,414, Cl. 355-58.000.

Takeda, Osamu: *See*—
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.

Takei, Haruo: *See*—
Okazaki, Masaki; and Takei, Haruo, 4,800,154, Cl. 430-570.000.

Takenaka, Hirokazu: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.

Takenaka, Hiroyuki: *See*—
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.

Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, to Yazaki Corporation. Fuse. 4,800,358, Cl. 337-268.000.

Takeuchi, Atsushi, to Fujitsu Limited. Time delay circuit for a semiconductor device. 4,800,304, Cl. 307-602.000.

Takeuchi, Hiroaki: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.

Takezawa, Mamoru: *See*—
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.

Takiguchi, Yasuhiro: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.

Takizawa, Toshimitsu, to Kabushiki Kaisha Toshiba. Magnetic disk drive having a magnetic-head with a head gap supported parallel to the moving direction of a magnetic-head positioning mechanism. 4,800,455, Cl. 360-104.000.

Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,800,192, Cl. 503-200.000.

Tanada, Shinichi: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.

Tanaka, Akinori: *See*—
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.

Tanaka, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Method of detecting cylinder pressure in internal combustion engine. 4,800,500, Cl. 364-431.080.

Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Ball spline linear motion rolling guide unit. 4,799,803, Cl. 384-43.000.

Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Four track-type endless rectilinear motion guide unit. 4,799,804, Cl. 384-44.000.

Tanaka, Kazuhiko, to Nippon Thompson Co. Ltd. Four track-type endless rectilinear motion guide unit. 4,799,805, Cl. 384-44.000.

Tanaka, Kazuhiko: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.

Tanaka, Koichi, to Honda Giken Kogyo Kabushiki Kaisha. Front cover for multi-wheeled vehicles. 4,799,568, Cl. 180-219.000.

Tanaka, Masaru; and Oka, Seiji, to Ricoh Company, Ltd. Magnetic brush development device for electrostatic latent images. 4,800,411, Cl. 355-3.0DD.

Tanaka, Nobuyuki, to Fuji Photo Film Co., Ltd. Method of smoothing image data. 4,800,511, Cl. 364-521.000.

Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, to Ricoh Company, Ltd. Digital modulator/demodulator including non-linear analog-to-digital converter and circuitry compensating for the non-linearity of the converter. 4,800,574, Cl. 375-26.000.

Tanaka, Shinsaku; and Kido, Kunio, to Tanashin Denki Co., Ltd. Automatic reverse mechanism for tape recorder. 4,800,451, Cl. 360-74.200.

Tanaka, Tsuneo; and Mori, Katsuhisa, to Toyoda Koki Kabushiki Kaisha. Rotary servovalve for power-assisted steering system. 4,799,514, Cl. 137-625.230.

Tanaka, Tsutomu; and Oinaga, Yuji, to Fujitsu Limited. Buffer storage control system having a priority circuit. 4,800,490, Cl. 364-200.000.

Tanaka, Yoshihiro: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

Tanashin Denki Co., Ltd.: *See*—
Tanaka, Shinsaku; and Kido, Kunio, 4,800,451, Cl. 360-74.200.

Tandem Computers Incorporated: *See*—
Ferchau, Joerg U.; and Kotyuk, Kenneth A., 4,800,463, Cl. 361-424.000.
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., 4,800,462, Cl. 361-413.000.

Tandy Electronics Japan, Ltd.: *See*—
Kitanishi, Ryoji, 4,800,584, Cl. 379-355.000.

Tanigawa, Toshiaki: *See*—
Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, 4,800,574, Cl. 375-26.000.

Taniguchi, Koki, to Sharp Kabushiki Kaisha. Liquid crystal display with stopper pins in guide means. 4,799,771, Cl. 350-334.000.

Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hirsoka, Fumio; and Nakamura, Ikuro, to Yoshitomi Pharmaceutical Industries, Ltd.; and Taniguchi, Masaru. Human monoclonal antibody to lung carcinoma and hybridoma producing the same. 4,800,155, Cl. 435-7.000.

Taniguchi, Nobuyuki: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

Taniguti, Shiniti: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.

Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, to Nippon Ceramic Co., Ltd. Pyroelectric infrared sensor. 4,800,278, Cl. 250-338.100.

Tanimoto, Hiroshi; and Yamada, Hisashi, to Kabushiki Kaisha Toshiba. Amplifier circuit. 4,800,339, Cl. 330-253.000.

Tanimoto, Takao: *See*—
Tsukamoto, Takeshi; Tanimoto, Takao; and Miyao, Hidetoshi, 4,799,789, Cl. 356-73.100.
Tsukamoto, Takeshi; and Tanimoto, Takao, 4,799,790, Cl. 356-73.100.

Tanzawa, Kenji: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Tanzawa, Kenji, 4,799,867, Cl. 418-1.000.

Tao Nenryo Kogyo Kabushiki Kaisha: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.

Tasset, Emmett L., to Dow Chemical Company, The. Regeneration of fluorocarbonsulfonic acid catalysts. 4,800,186, Cl. 502-33.000.

Tatabanyai Szenbanyak: *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.

Tatchyn, Roman O.: *See*—
Csonka, Paul L.; and Tatchyn, Roman O., 4,800,353, Cl. 335-210.000.

Taylor, Geoffrey W.: *See*—
Simmons, John G.; and Taylor, Geoffrey W., 4,800,415, Cl. 357-34.000.

Taylor, Jefferson H.: *See*—
Green, Eugene L., Sr.; and Taylor, Jefferson H., 4,800,287, Cl. 250-560.000.

Taylor, Keith A., to Tektronix, Inc. Pin driver circuit. 4,800,294, Cl. 307-263.000.

Taylor, Wesley L. Adjustable safety relief valve. 4,799,506, Cl. 137-469.000.

Tech Research, Inc.: *See*—
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,799,307, Cl. 29-452.000.

Technical Equipment Associates of Florida, Inc.: *See*—
Perkins, Benjamin F., Jr., 4,799,906, Cl. 441-85.000.

Technicon Instruments Corporation: *See*—
Uffenheimer, Kenneth F., 4,799,393, Cl. 73-864.220.

Tegeler, John J.; and Shoger, Kirk D., to Hoechst-Roussel Pharmaceuticals Inc. 4,8-dihydro-8-arylisoxazolo[4,3-e][1,4]-oxazepin-5(6H)-ones. 4,800,200, Cl. 514-211.000.

Tejima, Shunichiro: *See*—
Aoki, Takahiro; and Tejima, Shunichiro, 4,800,560, Cl. 370-104.000.

Tekbilt, Inc.: *See*—
Bruner, George M., Jr., 4,799,683, Cl. 273-138.00A.

Tekippe, Vincent J., to Gould Inc. Detection device using fiber optic techniques. 4,799,751, Cl. 350-96.150.

Tekken Construction Co., Ltd.: *See*—
Kumai, Fumitaka; and Takano, Yoshihiro, 4,799,824, Cl. 405-146.000.

Tektronix, Inc.: *See*—
Crinon, Regis J.; and Jenq, Yih-Chyun, 4,800,443, Cl. 338-280.000.
Konishi, Tomoo, 4,800,571, Cl. 375-10.000.
Taylor, Keith A., 4,800,294, Cl. 307-263.000.

Teledyne Industries, Inc.: *See*—
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

Teot, Arthur S.: *See*—
Rose, Gene D.; Teot, Arthur S.; and Foster, Kenneth L., 4,800,036, Cl. 252-102.000.

Teranishi, Akio: *See*—
Tachita, Ryobun; Ikeda, Ken; and Teranishi, Akio, 4,800,577, Cl. 375-115.000.

Teranishi, Hiroshi: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.

Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., to Marvin Glass & Associates. Electronic game with animated host. 4,799,678, Cl. 273-1.00E.

Teutsch, Walter: *See—*
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.
Texaco Inc.: *See—*
Waddill, Harold G., 4,800,222, Cl. 528-94.000.
Texas Instruments Incorporated: *See—*
Hutchins, Charles L., 4,800,332, Cl. 324-73.00R.
Ovens, Kevin M.; Maxey, Jay A.; and Greenberg, Craig B., 4,800,296, Cl. 307-291.000.
Rao, Kalipatnam V.; Mitchell, Allan T.; and Paterson, James L., 4,799,992, Cl. 156-643.000.
Shah, Ashwin H.; Womack, Richard H.; and Wang, Chu-Ping, 4,800,525, Cl. 365-72.000.
Theeuwes, Felix: *See—*
Eckenhoff, James B.; Theeuwes, Felix; and Deters, Joseph C., 4,800,056, Cl. 264-129.000.
Theis, Peter F. Overflow call handling system. 4,800,583, Cl. 379-67.000.
Thermacore, Inc.: *See—*
Hoke, Bryan C., Jr., 4,799,537, Cl. 165-32.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning apparatus. 4,799,430, Cl. 104-2.000.
Thomas, Henry, Jr.: *See—*
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.
Thomas, Mammen: *See—*
Iranmanesh, Ali; and Thomas, Mammen, 4,800,171, Cl. 437-31.000.
Thomas, Michael S.: *See—*
Transue, James A.; Pynn, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., 4,799,481, Cl. 128-325.000.
Thomas Swan & Co., Ltd.: *See—*
Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, 4,799,453, Cl. 118-665.000.
Thompson, Barbara J.; and Dittakavi, Ashok, to Thompson, Barbara J. Electronic learning device for teaching how to tell time. 4,799,890, Cl. 434-304.000.
Thompson, Daniel T. Articulated belt like toroid forming machine. 4,799,875, Cl. 425-329.000.
Thompson, Robert H., to Westvaco Corporation. System for sensing a discontinuity in a paper web and containing web puncturing means across the web width. 4,799,997, Cl. 162-255.000.
Thurston, Marlin O.: *See—*
Davis, John R.; and Thurston, Marlin O., 4,799,763, Cl. 350-137.000.
Tice, Bill, to ETI Systems. Motorized control unit with torsional elastomeric bias. 4,800,308, Cl. 310-83.000.
Tiller, Hans-Jurgen: *See—*
Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Grosch, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, 4,799,753, Cl. 350-96.180.
Timex Corporation: *See—*
Wuthrich, Paul; and Kaulins, Edward, 4,800,545, Cl. 368-190.000.
Timken Company, The: *See—*
Otto, Dennis L., 4,799,808, Cl. 384-481.000.
Tischler, Allan N.; Durette, Philippe L.; Witzel, Bruce E.; and Lanza, Thomas J., Jr., to Merck & Co., Inc. 5-methylthio-3-hydroxybenzo [b]thiophene-2-carboxamide derivatives as cyclooxygenase and lipoxygenase inhibitors. 4,800,211, Cl. 514-443.000.
Tissari, Osmo. Device for washing of carpets. 4,799,368, Cl. 68-19.100.
Tiszai, Gyorgy: *See—*
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Tittizer, Gabriel; and Junghans, Ewald, to Interatom GmbH. Hydraulic valve drive for internal combustion engines. 4,799,462, Cl. 123-90.120.
Toba, Akira, to Kabushiki Kaisha Toshiba. Slow-playback for helical scanning type VCR-VTR. 4,800,447, Cl. 360-10.300.
Toishi, Yoshiyuki, to Yoshida Kogyo K. K. Foot-operated press. 4,799,612, Cl. 227-121.000.
Tokunaga, Atuto: *See—*
Kataoka, Mutsuo; and Tokunaga, Atuto, 4,800,151, Cl. 430-270.000.
Tokunaga, Shinji: *See—*
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.
Tokyo Keiki Company, Ltd.: *See—*
Okada, Kozo, 4,800,388, Cl. 342-194.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Hideshima, Masayuki, 4,799,489, Cl. 128-648.000.
Toledo Scale Corporation: *See—*
Griffen, Neil C., 4,799,558, Cl. 177-25.000.
Toledo Stamping & Manufacturing Company: *See—*
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.
Tomar Electronics, Inc.: *See—*
Sikora, Scott T., 4,800,323, Cl. 315-219.000.
Tomek, Martin L.: *See—*
Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., 4,799,546, Cl. 166-250.000.
Tonshoff, Hans K.; Grabber, Thomas; Gosebruch, Harald; and Jendryschik, Jurgen, to Ernst Winter & Sohn (GmbH & Co.). Method of and arrangement for dressing grinding wheels. 4,799,472, Cl. 125-11.00R.
Toray Industries, Inc.: *See—*
Kataoka, Mutsuo; and Tokunaga, Atuto, 4,800,151, Cl. 430-270.000.
Torguet, Roger: *See—*
Edouard, Bridoux; Lievin, Camus; Christian, Bruneel; Marc, Gazzalet; and Torguet, Roger, 4,799,777, Cl. 350-358.000.
Toriwaki, Masao; Kawakami, Kinya; and Ishino, Tomoaki, to Toyo Netsu Kogyo Kaisha, Ltd. Plate cleaning apparatus and cleaning roller therefor. 4,799,284, Cl. 15-230.120.
Toshiba Ceramics Co., Ltd.: *See—*
Shimai, Shunzo; Saito, Yoshio; Ando, Yawara; and Koseki, Takashi, 4,799,601, Cl. 220-21.00R.
Toshiba Kikai Kabushiki Kaisha: *See—*
Nakanishi, Yoshinori, 4,800,325, Cl. 318-661.000.
Tosoh Corporation: *See—*
Ohkura, Yosuke, 4,800,223, Cl. 544-354.000.
Touboul, Pierre: *See—*
Bernard, Alain; and Touboul, Pierre, 4,799,386, Cl. 73-517.00B.
Toukan, Sameeh S., to Pennwalt Corporation. Polymers and lubricant additives of alkylene dithiothiadiazoles and alkylene cyanodithioimidocarbonates. 4,800,028, Cl. 252-25.000.
Toy, Sylvia S. Cook's caddy. 4,799,744, Cl. 312-229.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Ohta, Toshihiko; Okada, Fujio; and Hayashi, Masahiro, 4,800,121, Cl. 428-364.000.
Toyo Netsu Kogyo Kaisha, Ltd.: *See—*
Toriwaki, Masao; Kawakami, Kinya; and Ishino, Tomoaki, 4,799,284, Cl. 15-230.120.
Toyo Seikan Kaisha, Ltd.: *See—*
Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, 4,800,250, Cl. 219-121.630.
Toyoda Koki Kabushiki Kaisha: *See—*
Tanaka, Tsuneo; and Mori, Katsuhisa, 4,799,514, Cl. 137-625.230.
Toyota Jidosha Kabushiki Kaisha: *See—*
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.
Demura, Hiroshi; Kawahashi, Akira; Hayashi, Kazumi; and Kokubu, Sadao, 4,799,769, Cl. 350-331.00R.
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.
Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, 4,800,362, Cl. 340-78.000.
Shibata, Yoshiaki; and Ohnaka, Hidemi, 4,799,466, Cl. 123-327.000.
Tozuka, Mitsuhiko: *See—*
Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, 4,800,358, Cl. 337-268.000.
TP Orthodontics, Inc.: *See—*
Kesling, Peter C., 4,799,882, Cl. 433-8.000.
Transue, James A.; Pynn, John N.; D'Innocenzio, Joseph; Thomas, Michael S.; and Gertzman, Arthur A., to Ethicon, Inc. Surgical hemostatic clips. 4,799,481, Cl. 128-325.000.
Treibacher Chemische Werke AG: *See—*
Janz, Peter; and Gottschamel, Georg, 4,799,938, Cl. 51-293.000.
Tremblay, Denis. Venitian blind lamp. 4,800,473, Cl. 362-217.000.
Treon, Mark A. Battery powered fiber optic fish lure. 4,799,327, Cl. 43-17.600.
Tri Electronics Company, Inc.: *See—*
Medvinsky, Boris; and Radomyshelsky, Leonid, 4,799,999, Cl. 204-1.00T.
Triad Direct Incorporated: *See—*
Barabino, William A.; and Dean, Raymond S., 4,799,815, Cl. 401-132.000.
TriQuint Semiconductor, Inc.: *See—*
Hargreaves, William P., 4,799,892, Cl. 439-72.000.
Trisl, Klaus, to Uhrenhandelsgesellschaft mbH. Presentation or display base. 4,799,588, Cl. 206-301.000.
Trocciola, John C.: *See—*
Swarr, Thomas E.; and Trocciola, John C., 4,800,052, Cl. 264-65.000.
Trommer, Gert: *See—*
Borner, Manfred; Muller, Reinhard; and Trommer, Gert, 4,799,749, Cl. 350-96.130.
Tromp, Corwin M., to CMI International, Inc. Vehicle road sensor. 4,799,381, Cl. 73-146.000.
Truelove, Ronald D.: *See—*
Goodson, Thomas A.; and Truelove, Ronald D., 4,799,369, Cl. 70-54.000.
TRW Inc: *See—*
Chuang, Jo-Yu, 4,799,844, Cl. 411-414.000.
TRW Inc.: *See—*
Marum, John R., 4,800,302, Cl. 307-441.000.
Prinz, Thomas K.; and Dier, Stephen A., 4,799,303, Cl. 29-157.10R.
Tsai, Sheng J., to American Telephone and Telegraph Company. Method and apparatus for sensing signals. 4,800,301, Cl. 307-362.000.
Tsukamoto, Takeshi; Tanimoto, Takao; and Miyao, Hidetoshi, to Anritsu Corporation. Chromatic dispersion measuring system for optical fibers. 4,799,789, Cl. 356-73.100.
Tsukamoto, Takeshi; and Tanimoto, Takao, to Anritsu Corporation. Chromatic dispersion measuring system for optical fibers. 4,799,790, Cl. 356-73.100.

Tungsram Reszvenytarsasag: *See*—
Salgo , Tamas, 4,799,912, Cl. 445-26.000.
Turner, Barry S.: *See*—
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., 4,799,287, Cl. 15-405.000.
Tuss, John J., to Warner & Swasey Company, The. Coordinate measuring machine with a probe shaft counter balance system. 4,799,316, Cl. 33-503.000.
Tuthill Corporation: *See*—
Sarson, Charles R., 4,799,512, Cl. 137-614.040.
Tuttle, John. Adjustable eye glass frame. 4,799,782, Cl. 351-118.000.
Twieg, Robert J.: *See*—
Allen, Robert D.; Frechet, Jean M. J.; Twieg, Robert J.; and Willson, Carlton G., 4,800,152, Cl. 430-270.000.
Tymon, Thomas M.; and Niznik, Shelly S., to Armstrong World Industries, Inc. Suspensions of sheet silicate materials and products made therefrom. 4,800,041, Cl. 252-378.00R.
UBE Industries, Inc.: *See*—
Yamamoto, Tadashi; and Suzuki, Michiyuki, 4,799,531, Cl. 164-120.000.
UBE Industries, Ltd.: *See*—
Ueno, Toyoaki; Dannoura, Sadayuki; and Uchida, Masashi, 4,799,534, Cl. 164-314.000.
Uchida, Masashi: *See*—
Ueno, Toyoaki; Dannoura, Sadayuki; and Uchida, Masashi, 4,799,534, Cl. 164-314.000.
Uchiyama, Akira: *See*—
Yonekura, Katsuyoshi; Uchiyama, Akira; and Matsuda, Akira, 4,800,130, Cl. 428-517.000.
Udvardi, Geza: *See*—
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Ueda, Hideaki; Yuge, Shizuo; and Konishi, Katsutoshi, to Minolta Camera Kabushiki Kaisha. Laminated type photosensitive member for electrophotography comprising a substrate alumite. 4,800,144, Cl. 430-58.000.
Ueda, Masahide, to Minolta Camera Kabushiki Kaisha. Apparatus for developing electrostatic latent images. 4,800,412, Cl. 355-3.0DD.
Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Medical tube to be inserted in body cavity. 4,799,474, Cl. 128-4.000.
Uehara, Tsukasa: *See*—
Okauchi, Shigeki; and Uehara, Tsukasa, 4,800,453, Cl. 360-99.020.
Ueno, Kouji, to Fujitsu Limited. Semiconductive memory device with current control and comparison means to reduce power consumption and increase operating speed. 4,800,529, Cl. 365-189.000.
Ueno, Toyoaki; Dannoura, Sadayuki; and Uchida, Masashi, to UBE Industries, Ltd. Vertical die casting machine. 4,799,534, Cl. 164-314.000.
Uffenheimer, Kenneth F., to Technicon Instruments Corporation. Combined closed and open tube sampling apparatus and method. 4,799,393, Cl. 73-864.220.
Uglow, Katharine A. Roof drain coupling. 4,799,713, Cl. 285-42.000.
Uhrenhandelsgesellschaft mbH: *See*—
Trisl, Klaus, 4,799,588, Cl. 206-301.000.
Ulanday, Myrna G.: *See*—
Bailey, Mark W.; and Ulanday, Myrna G., 4,800,167, Cl. 436-66.000.
Umeda, Mitsuru: *See*—
Kubo, Haruaki; Umeda, Mitsuru; and Iwakoshi, Hiromitsu, 4,799,838, Cl. 409-234.000.
Umetsu, Syozo: *See*—
Arai, Kozo; Suzuki, Takao; and Umetsu, Syozo, 4,800,133, Cl. 428-606.000.
Unilever Patent Holdings B.V.: *See*—
Lawrence, Jack, 4,799,593, Cl. 206-585.000.
Union Carbide Corporation: *See*—
Bikson, Benjamin; and Giglia, Salvatore, 4,800,019, Cl. 210-321.800.
Union Oil Company of California: *See*—
Miller, Alex E., 4,800,092, Cl. 426-69.000.
Unisys Corporation: *See*—
Lake, Ralph, 4,799,314, Cl. 29-846.000.
Steele, David; and Bradford, Robert G., 4,800,259, Cl. 235-483.000.
United States of America
Agriculture: *See*—
Parrish, Frederick W.; and Serota, Samuel, 4,799,966, Cl. 127-63.000.
Energy: *See*—
Annala, Wayne C., 4,800,540, Cl. 367-87.000.
Pappas, Daniel S., 4,800,566, Cl. 372-73.000.
Quinby, Thomas C., 4,800,183, Cl. 501-96.000.
Health and Human Services: *See*—
Prince, Gregory; Chanock, Robert; and Hemming, Val G., 4,800,078, Cl. 424-86.000.
Interior: *See*—
Sapko, Michael J.; and Ward, Jack A., Jr., 4,799,799, Cl. 356-446.000.
Navy: *See*—
Bridges, William B.; and Bruno, William M., 4,800,350, Cl. 333-239.000.
U.S. Philips Corp.: *See*—
Berney, Jean-Claude, 4,800,334, Cl. 324-158.0MG.
Bremer, Fridtjof; and Muijderman, Everhardus, 4,799,421, Cl. 92-162.00R.
Corneliissen, Bernardus H. J., 4,800,534, Cl. 365-233.000.
Dorland, Hendricus A. H., 4,800,585, Cl. 379-364.000.
Geddes, Ronald C., 4,800,528, Cl. 365-185.000.
Houtman, Eliberthus; and Brouwer, Geert, 4,800,580, Cl. 378-71.000.
Johanndeiter, Martin H.; and Oldach, Detlef W. K., 4,800,428, Cl. 358-142.000.
Kessels, Henricus M. M.; and Velzel, Christiaan H. F., 4,800,547, Cl. 369-45.000.
Meier, Otto; Sadek, Kurt; Sikoronja, Zvonko; and Schroder, Johann, 4,799,364, Cl. 62-342.000.
Polaert, Remy; and Schorter, Bruno, 4,800,436, Cl. 358-232.000.
Snijders, Wilfred A. M., 4,800,384, Cl. 340-825.520.
Van Kemenade, Johannes T. C.; De Hair, Johannes T. W.; and Berns, Everhardus G., 4,800,319, Cl. 313-487.000.
United Technologies Corporation: *See*—
Bruchez, Raymond J., Jr.; Eichhorn, Gunther; and Kiblinger, Elliott C., II, 4,799,623, Cl. 239-265.410.
Vesce, Richard V.; and Reck, Andrew C., 4,800,331, Cl. 323-277.000.
University of California, The Regents of the: *See*—
Batzer, Thomas H.; and Call, Wayne R., 4,799,692, Cl. 277-34.000.
Hansma, Paul K.; and Sonnenfeld, Richard, 4,800,274, Cl. 250-306.000.
Hirschfeld, Tomas B., 4,799,756, Cl. 350-96.180.
University of Michigan, The: *See*—
Yang, Victor C., 4,800,016, Cl. 210-206.000.
Unsworth, Peter J., to National Research Development Corporation. Apparatus and methods for controlling induction motors. 4,800,326, Cl. 318-729.000.
Uomi, Kazuhisa: *See*—
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, 4,800,565, Cl. 372-45.000.
UOP: *See*—
BeVier, William E.; Fails, Charles F., deceased; and Fails, Virginia N., executor, 4,800,027, Cl. 252-18.000.
Wilson, Stephen T.; Woodard, Naomi A.; and Flanigen, Edith M., 4,799,942, Cl. 55-35.000.
Ushiyama, Yasuichi: *See*—
Ikeda, Sadayuki; Inoue, Hidehiko; Nagai, Kiyotake; Nakajima, Hiroshi; and Ushiyama, Yasuichi, 4,800,435, Cl. 358-213.190.
Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Washizu, Katsushi; and Usui Kokusai Sangyo Kabushiki Kaisha, 4,800,109, Cl. 428-34.900.
Utsumi, Shigeo, to Diafoil Company, Limited. Uniaxially high-oriented polyethylene naphthalate film for liquid crystal panel substrates. 4,799,772, Cl. 350-339.00R.
Vandenbergh, Peter A., to Microlife Technics, Inc. Bacterial method and compositions for linalool degradation. 4,800,158, Cl. 435-172.100.
Vandermeer, William B.: *See*—
Barber, Thomas D.; Vandermeer, William B.; and Flanagan, William D., 4,800,496, Cl. 364-422.000.
Van Dest, Jean Claude, to Glaenzer Spicer. Transmission device for a front wheel drive vehicle. 4,799,402, Cl. 74-701.000.
Van Gompel, James; and Hall, Jerry A., to NP Marketing Corporation. Drum-restraining device. 4,799,840, Cl. 410-42.000.
Vanguard-Hill, Inc.: *See*—
Hill, D. James, 4,800,239, Cl. 174-66.000.
Van Kemenade, Johannes T. C.; De Hair, Johannes T. W.; and Berns, Everhardus G., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,800,319, Cl. 313-487.000.
Van Wagoner, Earl, III: *See*—
Hoggan, Lynn D.; Van Wagoner, Earl, III; and Balogh, Edward N., 4,799,671, Cl. 272-118.000.
Vari-Lite, Inc.: *See*—
Bornhorst, James M., 4,800,474, Cl. 362-293.000.
Varian Associates, Inc.: *See*—
Foxall, David L., 4,800,494, Cl. 364-413.130.
Varo, Inc.: *See*—
Relder, Edward J., 4,799,911, Cl. 445-14.000.
Varri, Alpo O.: *See*—
Kulju, Hannu; and Varri, Alpo O., 4,800,386, Cl. 342-61.000.
Vatcha, Neville F.: *See*—
Ventimiglia, Joseph J.; and Vatcha, Neville F., 4,800,116, Cl. 428-215.000.
Vaughan, James C., to Higgins, Willis E., a part interest. Computer key and computer lock system. 4,800,590, Cl. 380-25.000.
VCL Audio: *See*—
Vissiere, Daniel, 4,800,264, Cl. 250-221.000.
Velte, Dieter: *See*—
Schacht, Eckhard; Velte, Dieter; Werner, Wolfgang; and Wolf, Albert, 4,800,128, Cl. 421-448.000.
Velzel, Christiaan H. F.: *See*—
Kessels, Henricus M. M.; and Velzel, Christiaan H. F., 4,800,547, Cl. 369-45.000.
Ventimiglia, Joseph J.; and Vatcha, Neville F., to Sinclair and Rush, Inc. Dip molding process and article. 4,800,116, Cl. 428-215.000.
Vergez, Andre : *See*—
Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , 4,800,352, Cl. 335-132.000.
Verner, Douglas R., to Allied-Signal Inc. Voltage doubler and system therefor. 4,800,480, Cl. 363-60.000.
Verrall, Jane A.: *See*—
Farmer, David M.; and Verrall, Jane A., 4,800,541, Cl. 367-424.000.
Vershbow, Daniel R., to Servolift/Eastern Corporation. Dish dispensing device. 4,799,606, Cl. 221-280.000.

Vesce, Richard V.; and Reck, Andrew C., to United Technologies Corporation. Linear current limiter with temperature shutdown. 4,800,331, Cl. 323-277.000.

Vetco Gray Inc.: *See*—
Jaqua, David L., 4,799,827, Cl. 405-195.000.

Vetecnik, Ivan, to I E Sensors, Inc. Wetness detection system. 4,800,370, Cl. 340-573.000.

Vicino, Robert K., to Charmasson & Holz, a part interest. Method of molding monolithic building structure. 4,799,982, Cl. 156-71.000.

Vickers, John: *See*—
Morris, Michael; and Vickers, John, 4,799,958, Cl. 106-1.120.

Victor Company of Japan, Limited: *See*—
Yamasaki, Hidetoshi; and Murata, Masae, 4,800,554, Cl. 369-291.000.

Vij, Jitender K.: *See*—
Gerety, Eugene P.; and Vij, Jitender K., 4,800,523, Cl. 364-900.000.

Vilella, Antonio R., to Daniel Aguilo Panisello S.A. Corner construction of stackable cardboard box. 4,799,620, Cl. 229-191.000.

Villoch, Joe D.; Gatto, Claudio U.; and Oprisi, Mike V., to American Vertical Systems. Vertical blind assembly. 4,799,527, Cl. 160-168.100.

Vinberg, Anders B.; and Colby, Kenneth W., to Computer Associates International, Inc. Method and system for programmed control of computer generated graphics layout. 4,800,510, Cl. 364-521.000.

Vinot, Bernard; Berrod, Gerard; and Brun, Jean-Louis, to Rhone-Poulenc Specialites Chimique. Gel-forming aqueous microemulsions for soil stabilization. 4,799,549, Cl. 166-293.000.

Vision Engineering & Design, Inc.: *See*—
Francis, Geoffrey V., 4,799,344, Cl. 52-235.000.

Vissiere, Daniel, to VCL Audio. Manually controlled static switch. 4,800,264, Cl. 250-221.000.

Vistech Consultants, Inc.: *See*—
Ginsburg, Arthur P.; Evans, David W.; and Blauvelt, Kenneth, 4,800,404, Cl. 351-243.000.

Vogel, Ferdinand L. Swing sail boat. 4,799,443, Cl. 114-39.100.

Vogel, Ferdinand L., to Intercal Company. Intercalatd graphite gaskets and pressure seals. 4,799,956, Cl. 75-243.000.

Vogel, Ferdinand L., to Intercal Company. Intercalated graphite containing electrical motor brushes and other contacts. 4,799,957, Cl. 75-243.000.

Vollmer, Rolf, to Montanwerke Walter GmbH. Multi-component chucking system, particularly for rotary machine tools, such as drills, boring tools boring mills and the like. 4,799,837, Cl. 409-232.000.

Von Deylen, Vernon F.: *See*—
Minuhin, Vadim B.; and Von Deylen, Vernon F., 4,800,295, Cl. 307-273.000.

W. R. Grace & Co.: *See*—
Havens, Marvin R., 4,800,115, Cl. 428-178.000.

Wacek, Rudolph W.; and Crevling, R. Lent, Jr., to Shop-Vac Corporation. Mounting for brushes of electric motors. 4,800,312, Cl. 310-239.000.

Wada, Ichiro: *See*—
Arase, Akira; and Wada, Ichiro, 4,799,843, Cl. 414-331.000.

Waddill, Harold G., to Texaco Inc. Accelerator for curing epoxy resins compriaing piperazine, triethanolamine and tris(dimethylaminomethyl)phenol. 4,800,222, Cl. 528-94.000.

Wagemann, Alfred: *See*—
Schulz, Manfred; Wagemann, Alfred; and Waldner, Gerhard, 4,800,315, Cl. 310-261.000.

Wagner, Joseph P.: *See*—
Scott, Douglas R.; Goddard, Peggy L.; and Wagner, Joseph P., 4,799,301, Cl. 29-25.350.

Wah Lo, Allen K. Total focus 3-D camera and 3-D image structure. 4,800,407, Cl. 354-114.000.

Wakabayashi, Seiichi: *See*—
Yukawa, Yoshimi; and Wakabayashi, Seiichi, 4,800,359, Cl. 338-214.000.

Wakabayashi, Toshikatsu: *See*—
Kurumada, Norimitsu; Kuribayashi, Hiroshi; Shibata, Setsuo; Wakabayashi, Toshikatsu; Hasegawa, Akira; and Shibuya, Mamoru, 4,800,042, Cl. 252-628.000.

Waki, Tatsuo; Watanabe, Takeshi; and Suzuki, Kazuo, to Lonseal Corporation. Open cell body made of hard vinyl chloride resin. 4,800,214, Cl. 521-84.100.

Waldner, Gerhard: *See*—
Schulz, Manfred; Wagemann, Alfred; and Waldner, Gerhard, 4,800,315, Cl. 310-261.000.

Walker, Francis H.: *See*—
Baker, Don R.; Walker, Francis H.; and Brownell, Keith H., 4,800,205, Cl. 514-346.000.

Walker, Fritz: *See*—
Goller, Ernest; and Walker, Fritz, 4,799,365, Cl. 66-166.000.

Walker, Timothy D.; and Dancy, Steven A., to Dancy, Carl Livingston, Sr. Protective device to prevent projection of a heavy coiled spring away from an air brake housing. 4,799,576, Cl. 188-84.000.

Walters, Donald M., Jr., to Advanced Micro Devices, Inc. High-performance, CMOS latch for improved reliability. 4,800,300, Cl. 307-279.000.

Wang, Chu-Ping: *See*—
Shah, Ashwin H.; Womack, Richard H.; and Wang, Chu-Ping, 4,800,525, Cl. 365-72.000.

Wang, Ko P. Percutaneous aspiration lung biopsy needle assembly. 4,799,494, Cl. 128-753.000.

Wang, Pen C., to Shell Oil Company. Keto-diesters production. 4,800,231, Cl. 560-176.000.

Wang, Tarrassa. Scooter with turnable rear wheel. 4,799,702, Cl. 280-87.041.

Ward, Jack A., Jr.: *See*—
Sapko, Michael J.; and Ward, Jack A., Jr., 4,799,799, Cl. 356-446.000.

Ward, Richard, to Gullick Dobson Limited. Valve for use in controlling the functions of mine roof supports. 4,799,510, Cl. 137-596.150.

Ward, Robert T.; and Butler, John M., to Westinghouse Electric Corp. Deep beam support arrangement for dynamoelectric machine stator coil end portions. 4,800,314, Cl. 310-260.000.

Warde, Cardinal: *See*—
Dillon, Robert F.; and Warde, Cardinal, 4,800,263, Cl. 250-213.00R.

Warn Industries, Inc.: *See*—
Scott, Gary M., 4,799,726, Cl. 296-100.000.

Warner-Lambert Company: *See*—
Glass, Michael; Hoholick, Joseph; Dombroski, Amy; and Faust, Steven M., 4,800,091, Cl. 426-3.000.

Warner, Robin L.; and DeSisto, Richard E., to General Signal Corporation. Long-life motor brush holder. 4,800,313, Cl. 310-242.000.

Warner & Swasey Company, The: *See*—
Tuss, John J., 4,799,316, Cl. 33-503.000.

Warren Pumps, Inc.: *See*—
Paugh, James J., Jr.; and Hinckley, Charles J., 4,799,861, Cl. 416-186.00R.

Warwick, Amparo A. Computer page place marker. 4,799,812, Cl. 400-616.000.

Washizu, Katsushi; and Usui Kokusai Sangyo Kabushiki Kaisha. Flexible composite hose. 4,800,109, Cl. 428-34.900.

Watanabe, Akihito: *See*—
Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, 4,799,380, Cl. 73-116.000.

Watanabe, Kaneo: *See*—
Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, 4,799,968, Cl. 136-258.000.

Watanabe, Kazuhiro: *See*—
Hakamatsuka, Yasuharu; and Watanabe, Kazuhiro, 4,799,887, Cl. 433-212.100.

Watanabe, Masakazu: *See*—
Okuno, Akiyasu; Watanabe, Masakazu; and Ikoma, Kazuhiko, 4,800,137, Cl. 428-698.000.

Watanabe, Masaru; and Tabei, Ichiro, to Copal Electronics Co., Ltd. Level winder for double-bearing fishing reel. 4,799,628, Cl. 242-84.420.

Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, to Toyo Seikan Kaisha, Ltd. Methods and apparatus for manufacturing tubes. 4,800,250, Cl. 219-121.630.

Watanabe, Shigeyoshi: *See*—
Itoh, Yasuo; Horiguchi, Fumio; Watanabe, Shigeyoshi; Ohuchi, Kazunori; and Ogura, Mitsugi, 4,800,530, Cl. 365-189.000.

Watanabe, Takeshi: *See*—
Waki, Tatsuo; Watanabe, Takeshi; and Suzuki, Kazuo, 4,800,214, Cl. 521-84.100.

Watanabe, Tsugio: *See*—
Takechi, Moriaki; Watanabe, Tsugio; and Kuroda, Shigenori, 4,800,355, Cl. 335-301.000.

Watanabe, Yoshimi: *See*—
Suga, Ryoichi; Nakagawa, Yutaka; and Watanabe, Yoshimi, 4,800,376, Cl. 340-721.000.

Watson, John P.; and Graff, William P. Gravity-operated gate latch apparatus. 4,799,720, Cl. 292-299.000.

Waukesha Rubber Company, Inc.: *See*—
Dewberry, Larry S.; and Schlipp, Richard H., 4,799,293, Cl. 17-11.10R.

Wausau Metals Corporation: *See*—
Reeves, John R., 4,799,526, Cl. 160-168.100.

Wawra, Helmut; Scheurenbrand, Dieter; and Kleineberg, Wolfgang, to Daimler-Benz Aktiengesellschaft. Venting arrangement for fuel tanks of motor vehicles. 4,799,509, Cl. 137-587.000.

Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., to Ford New Holland, Inc. Method and apparatus for adjusting a shear bar relative to a cutter head. 4,799,623, Cl. 241-30.000.

Weber, Jens, to Krone GmbH. Optical demultiplex transmission equipment. 4,800,557, Cl. 370-3.000.

Weber, Karl, to Polaroid Corporation. Eyeglasses with detachable lenses. 4,799,781, Cl. 351-86.000.

Weidenbenner, Dennis W.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.

Weiler, Ludwig: *See*—
Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, 4,800,143, Cl. 429-153.000.

Weimar, Deborah M. Transparent puzzle. 4,799,680, Cl. 273-157.00R.

Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, to Bayer Aktiengesellschaft. Aminomethyltetrahydrofurans, fungicidal compositions and use. 4,800,202, Cl. 514-227.000.

Weldon, William F.; Gully, John H.; and Pichot, Mark A., to Board of Regents. Rotor assembly for homopolar generator. 4,800,311, Cl. 310-178.000.

Welker, Albert L.: *See*—
Bossart, Clayton J.; Fertig, Glenn H.; and Welker, Albert L., 4,799,374, Cl. 73-1.00G.

Weller, Jonathan W.: *See*—
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

Wells, Wesley G., to McDonnell Douglas. Cutter insert for KEVLAR. 4,799,834, Cl. 408-200.000.

Welter, Curtis; Coto, Guillermo; and Patrikios, Michael, to American Technology, Inc. Apparatus for ultrasonic welding of wires. 4,799,614, Cl. 228-1.100.

Wentworth, Robert J.: *See*—
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., 4,799,287, Cl. 15-405.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Kotthaus, Erich; Ginier, Ami; and Hildinger, Otto, 4,799,337, Cl. 51-287.000.

Werner, Wolfgang: *See*—
Schacht, Eckhard; Velte, Dieter; Werner, Wolfgang; and Wolf, Albert, 4,800,128, Cl. 421-448.000.

Wesolowski, Alex: *See*—
Kaufman, Richard; and Wesolowski, Alex, 4,800,168, Cl. 436-124.000.

West Point Pepperell: *See*—
Reed, John W.; and Smith, Richard D., 4,800,118, Cl. 428-270.000.

West, Raymond M.; and Steele, Robert W. Apparatus for digging surface trenches in the ground. 4,799,320, Cl. 37-80.00R.

Westermark, Mats O. J., to Scandiaconsult AB. Method and arrangement for condensing flue gases. 4,799,941, Cl. 55-90.000.

Western Atlas International, Inc.: *See*—
Krauss, Owen T.; and Gruber, Norman G., 4,799,389, Cl. 73-863.310.
Poorman, Thomas J., 4,800,266, Cl. 250-227.000.

Westfall, Norman R.; Martini, James A.; and Habbersett, John I., to Caldwell Manufacturing Company. Lock shoe system for take-out window. 4,799,333, Cl. 49-446.000.

Westinghouse Electric Corp.: *See*—
Brunner, Michael G.; and Calhoun, Gregory L., 4,799,305, Cl. 29-265.000.
Efferding, Larry E., 4,800,283, Cl. 250-507.100.
Shallenberger, John M.; and Ferlan, Stephen J., 4,799,312, Cl. 29-723.000.
Shallenberger, John M.; and Ferlan, Stephen J., 4,800,061, Cl. 376-261.000.
Ward, Robert T.; and Butler, John M., 4,800,314, Cl. 310-260.000.

Westvaco Corporation: *See*—
Thompson, Robert H., 4,799,997, Cl. 162-255.000.

Whelan, Andrew J.: *See*—
Biava, Richard D.; and Whelan, Andrew J., 4,799,712, Cl. 282-1.00A.

Whirlpool Corporation: *See*—
Chestnut, Paul B., 4,799,362, Cl. 62-127.000.

Whitaker, Stephen: *See*—
Iversen, Arthur H.; and Whitaker, Stephen, 4,799,543, Cl. 165-135.000.

White, Alan W., to Eastman Kodak Company. Novel diethanolamine triacetic acid triamides and methods for improving feed utilization and lactation in ruminant animals. 4,800,213, Cl. 514-616.000.

White, Francis R.: *See*—
Kerbaugh, Michael L.; Koburger, Charles W., III; Lasky, Jerome B.; Parries, Paul C.; and White, Francis R., 4,799,990, Cl. 156-636.000.

White, Robert L.; Highton, Frederick J.; Ito, Kazuo; and Miller, Gary L., to Burr-Brown Corporation. CMOS digital-to-analog converter circuitry. 4,800,365, Cl. 341-119.000.

Whiteside, George D.: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,800,405, Cl. 354-86.000.

Whitmore, Bryan: *See*—
Grunwald, John J.; Klein, Igal; and Whitmore, Bryan, 4,800,132, Cl. 428-560.000.

Wickert, Frank A., to Glidden Company, The. Dry fog sprayable latex paint. 4,800,107, Cl. 427-421.000.

Wickwire, Dean H.: *See*—
Bloomfield, Philip E.; Ferren, Richard A.; and Wickwire, Dean H., 4,800,048, Cl. 264-22.000.

Wieck, Ronald W.: *See*—
Strong, Michael R.; Puder, Allen T.; and Wieck, Ronald W., 4,799,377, Cl. 73-40.000.

Wildt, Manfred: *See*—
Dapperheld, Steffen; Heumuller, Rudolf; and Wildt, Manfred, 4,800,012, Cl. 204-73.00R.

Wiley, Franklyn L.: *See*—
Lake, Ralph J., Jr.; Wiley, Franklyn L.; Coby, A. Daniel; and Pluth, John, Jr., 4,800,402, Cl. 346-139.00R.

Wilhelm Hegenscheidt GmbH: *See*—
Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, 4,799,839, Cl. 409-244.000.

Williams, Carl, Jr.: *See*—
Cinzori, Carl; Williams, Carl, Jr.; Mitchell, Clair E.; and Striker, David L., 4,799,309, Cl. 29-596.000.

Williams, Mark A.: *See*—
Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., 4,800,053, Cl. 264-83.000.

Williams, Thomas D. Plow with readily replaceable wear parts especially adapted for use in a vibratory cable laying machine. 4,799,823, Cl. 405-180.000.

Williamson, Calvin C.; and Williamson, Joan. Apparatus for manually moving loads. 4,799,697, Cl. 280-3.000.

Williamson, Joan: *See*—
Williamson, Calvin C.; and Williamson, Joan, 4,799,697, Cl. 280-3.000.

Williamson, Neil. Exercise apparatus. 4,799,670, Cl. 272-117.000.

Williamson, Weldon S., to Hughes Aircraft Company. Compact penning-discharge plasma source. 4,800,281, Cl. 250-427.000.

Willsey, Charles H., to Seymour Foods, Inc. Egg contents separating mechanism. 4,799,423, Cl. 99-500.000.

Willson, Carlton G.: *See*—
Allen, Robert D.; Frechet, Jean M. J.; Twieg, Robert J.; and Willson, Carlton G., 4,800,152, Cl. 430-270.000.

Wilson, Clifford E. Compressor/pump. 4,799,868, Cl. 418-36.000.

Wilson Engraving Company, Inc.: *See*—
Green, Eugene L., Sr.; and Taylor, Jefferson H., 4,800,287, Cl. 250-560.000.

Wilson, Stephen T.; Woodard, Naomi A.; and Flanigen, Edith M., to UOP. Crystalline gallophosphate compositions. 4,799,942, Cl. 55-35.000.

Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., to Motorola Inc. Method for determining silicon (mass 28) beam purity prior to implantation of gallium arsenide. 4,799,392, Cl. 73-865.900.

Wilson, Thomas G. Kayak construction. 4,799,446, Cl. 114-347.000.

Wimmer, Joachim, to Park Dental Research Corp. Dental submerged endosseous implant. 4,799,886, Cl. 433-176.000.

Wintermantel, Erich; and Landwehr, Oswald, to Wintermantel, Erich. Profile elements, particularly for supply and/or removal of substances from environmental and/or flow material. 4,799,822, Cl. 405-46.000.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lau, Wan F., 4,800,198, Cl. 514-167.000.

Wisner, George R., to Otis Elevator Company. Pyroelectric detector arrangement. 4,800,368, Cl. 340-567.000.

Wisneski, Leonard J., Jr.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,800,378, Cl. 340-722.000.

Wissman, Terry L.; and Schockman, Robert L., to Minster Machine Co., The. Transfer belt for can end conversion press. 4,799,846, Cl. 413-66.000.

Wittkopp, Helmut: *See*—
Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, 4,799,839, Cl. 409-244.000.

Witzel, Bruce E.: *See*—
Tischler, Allan N.; Durette, Philippe L.; Witzel, Bruce E.; and Lanza, Thomas J., Jr., 4,800,211, Cl. 514-443.000.

Wochnowski, Waldemar: *See*—
Liebe, Reinhard; and Wochnowski, Waldemar, 4,799,501, Cl. 131-299.000.

Wolf, Albert: *See*—
Schacht, Eckhard; Velte, Dieter; Werner, Wolfgang; and Wolf, Albert, 4,800,128, Cl. 421-448.000.

Wolfe, Gilbert H. Game call having a two-diaphragm sounder and lip structure. 4,799,913, Cl. 446-193.000.

Wolters, Hermann: *See*—
Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, 4,799,839, Cl. 409-244.000.

Womack, Richard H.: *See*—
Shah, Ashwin H.; Womack, Richard H.; and Wang, Chu-Ping, 4,800,525, Cl. 365-72.000.

Wong, Hee, to National Semiconductor Corporation. Convolution data recovery circuit. 4,800,576, Cl. 375-83.000.

Wong, Louis F.: *See*—
Coffindaffer, Timothy W.; and Wong, Louis F., 4,800,026, Cl. 252-8.800.

Wong, Wah S.: *See*—
Chen, James C.; Wong, Wah S.; and Pao, Cheng K., 4,800,420, Cl. 357-76.000.

Wood, George. Motor operated lock. 4,799,719, Cl. 292-144.000.

Wood, Ray D.: *See*—
Ingalls, John P.; Maringer, Robert E.; and Wood, Ray D., 4,799,536, Cl. 164-479.000.

Woodard, Naomi A.: *See*—
Wilson, Stephen T.; Woodard, Naomi A.; and Flanigen, Edith M., 4,799,942, Cl. 55-35.000.

Woodruff, David C., to NM Laser Products, Inc. High speed shutter for a laser beam. 4,799,767, Cl. 350-269.000.

Wreede, John E., to Hughes Aircraft Company. Efficient holograms and method for making same. 4,799,746, Cl. 350-3.600.

Wright, George A., to RT/Katek Communications Group, Inc. Antenna mounting. 4,799,642, Cl. 248-516.000.

Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., to Xerox Corporation. Self-centering end effector. 4,799,853, Cl. 414-730.000.

Wu, Yulin, to Phillips Petroleum Company. Petroleum sulfonate adjuvants in epoxy resin corrosion-inhibiting composition. 4,799,553, Cl. 166-310.000.

Wuthrich, Paul; and Kaulins, Edward, to Timex Corporation. Removable stem and switch actuator for electronic wristwatch. 4,800,545, Cl. 368-190.000.

Xerox Corporation: *See*—
Carter, Jeff C.; Federico, Anthony M.; and Comparetta, Christopher, 4,800,521, Cl. 364-900.000.
Savage, Edward C., 4,800,147, Cl. 430-125.000.
Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., 4,799,853, Cl. 414-730.000.

Xydex Corporation: *See*—
Savas, Peter G.; Kiger, Virginia S.; and Boudreau, Ronald R., 4,800,020, Cl. 210-359.000.

Yagi, Nobuyuki: *See*—
Murakami, Keinosuke; Enami, Kazumasa; and Yagi, Nobuyuki, 4,800,430, Cl. 358-160.000.
Yale, David P.: *See*—
Sprunt, Eve S.; and Yale, David P., 4,799,382, Cl. 73-153.000.
Yamada, Haruki: *See*—
Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, 4,800,362, Cl. 340-78.000.
Yamada, Hisashi: *See*—
Tanimoto, Hiroshi; and Yamada, Hisashi, 4,800,339, Cl. 330-253.000.
Yamada, Kazuo: *See*—
Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, 4,799,353, Cl. 57-281.000.
Yamada, Kozo: *See*—
Gomi, Toyoji; and Yamada, Kozo, 4,800,369, Cl. 340-572.000.
Yamada, Minoru, to Fuji Photo Film Co., Ltd. Photographic material developing and processing apparatus. 4,800,408, Cl. 354-322.000.
Yamada, Shunichi: *See*—
Kobori, Takuji; Kanayama, Hiroo; Sakamoto, Mitsuo; Yamada, Shunichi; and Kamagata, Shuichi, 4,799,339, Cl. 52-1.000.
Yamagami, Tamotsu; and Sako, Yoichiro, to Sony Corporation. Method and apparatus for seeking target address with error check code. 4,800,549, Cl. 369-56.000.
Yamaguchi, Akihide: *See*—
Honda, Minoru; Fukuta, Toshiaki; Yamaguchi, Akihide; and Ikuta, Kenzi, 4,799,470, Cl. 123-470.000.
Yamaguchi, Kouji: *See*—
Ishikawa, Yoshikazu; and Yamaguchi, Kouji, 4,799,467, Cl. 123-399.000.
Yamaguchi, Toshiharu: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.
Yamaguchi, Yutaka: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.
Yamakawa, Kazuo, to Minolta Camera Kabushiki Kaisha. Tilt error corrective scanning optical system. 4,799,747, Cl. 350-6.800.
Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, to Hitachi, Ltd. Method and system for concurrent data transfer disk cache system. 4,800,483, Cl. 364-200.000.
Yamamoto, Tadashi; and Suzuki, Michiyuki, to UBE Industries, Inc. Casting method in high-pressure casting. 4,799,531, Cl. 164-120.000.
Yamamoto, Takashi; Mishina, Yoshihiko; and Oda, Masaaki, to Mitsubishi Rayon Co., Ltd. Plastic optical transmission medium, process for producing the same and array of lenses using the same. 4,799,761, Cl. 350-96.310.
Yamanaka, Hidetoshi: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.
Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, to Idemitsu Kosan Company Limited. Refrigerator oil composition. 4,800,013, Cl. 208-19.000.
Yamasaki, Hidenori, to Mitsubishi Denki Kabushiki Kaisha. DAT recorder with automatic cassette movement. 4,800,449, Cl. 360-71.000.
Yamasaki, Hidetoshi; and Murata, Masae, to Victor Company of Japan, Limited. Disk magazine. 4,800,554, Cl. 369-291.000.
Yamasaki, Richard G.: *See*—
Maimone, Peter; and Yamasaki, Richard G., 4,800,340, Cl. 331-1.00A.
Yamashita, Kenichi: *See*—
Kaneko, Masato; Nagakawa, Hiroshi; and Yamashita, Kenichi, 4,800,030, Cl. 252-32.500.
Yamauchi, Keiichi, to Pioneer Electronic Corporation. Multi-format optical disk recording/reproducing system. 4,800,550, Cl. 369-59.000.
Yamazaki, Hiroaki: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,800,201, Cl. 514-230.800.
Yamazaki, Kouichi, to Okamura Corporation. Chair seat inclining and moving device. 4,799,732, Cl. 297-300.000.
Yamazaki, Nobuyoshi, to Radic Co., Ltd.; and Sakata Denki Co., Ltd. Well data transmission system using a magnetic drill string for transmitting data as a magnetic flux signal. 4,800,385, Cl. 340-854.000.
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, to Semiconductor Energy Laboratory Co., Ltd. Ferroelectric liquid crystal display device having a single polarizer. 4,799,776, Cl. 350-350.00S.
Yan, Man F., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Method for fabricating ceramic materials. 4,800,051, Cl. 264-56.000.
Yanagisawa, Naoki; and Sato, Yoshihiko, to Isuzu Motors Limited. Combustion chamber for internal combustion engines. 4,799,465, Cl. 123-256.000.
Yang, Tai-Her. Dust collecting system for bench grinder. 4,799,336, Cl. 51-102.000.
Yang, Victor C., to University of Michigan, The. Extracorporeal blood de-heparinization system. 4,800,016, Cl. 210-206.000.
Yanmar Diesel Engine Co., Ltd.: *See*—
Yukino, Hiroyasu, 4,799,563, Cl. 180-14.400.
Yazaki Corporation: *See*—
Endo, Takayoshi, 4,799,899, Cl. 439-502.000.
Ogawa, Kikuo; and Kimura, Kikuo, 4,799,893, Cl. 439-76.000.
Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, 4,800,358, Cl. 337-268.000.
Yukawa, Yoshimi; and Wakabayashi, Seiichi, 4,800,359, Cl. 338-214.000.
Yeda Research & Development Co., Ltd.: *See*—
Goldring, Gvirol, 4,800,060, Cl. 376-202.000.
Yeomans, Andrew J. V., to Crosfield Electronics Limited. Image display with movable magnification. 4,800,379, Cl. 340-731.000.
Yi-Tung, Kao. Robot agua-feeder. 4,799,459, Cl. 119-51.110.
Yin, Simon, to Square D Research. Spring-powered drive assembly for opening and closing a switch. 4,800,242, Cl. 200-400.0RS.
Yin, Simon, to Square D Company. Electrical power protection technique. 4,800,460, Cl. 361-340.000.
Yockey, Patricia. Stuffed bear as teaching aid. 4,799,889, Cl. 434-112.000.
Yokota, Yasunori, to Nippon Thompson Co., Ltd. Method of manufacturing holding device of roller bearing for rectilinear motion. 4,799,302, Cl. 29-148.40C.
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Transparent electrophotographic photoreceptor comprising specific hydrazone and benzidine compounds as photoconductors. 4,800,146, Cl. 430-73.000.
Yokoyama, Sakae, to Stanley Electric Co., Ltd. Headlamp for vehicle. 4,800,468, Cl. 362-61.000.
Yoneda, Yoshihide: *See*—
Koshinaka, Osamu; Suzuki, Yoshikazu; and Yoneda, Yoshihide, 4,799,440, Cl. 112-162.000.
Yonehara, Takao: *See*—
Ozaki, Masaharu; and Yonehara, Takao, 4,800,527, Cl. 365-182.000.
Yonekura, Katsuyoshi; Uchiyama, Akira; and Matsuda, Akira, to Mitsui Petrochemical Industries, Ltd. Laminate excellent in surface gloss and surface hardness, and preparation process and use thereof. 4,800,130, Cl. 428-517.000.
Yonemori, Takaji: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.
Yonezawa, Akihiro: *See*—
Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, 4,800,321, Cl. 313-639.000.
Yoo, Jin S.: *See*—
Elvin, Frank J.; Otterstedt, Jan-Erik; and Yoo, Jin S., 4,800,185, Cl. 502-26.000.
Yorita, Tadahiro; and Hiroshima, Motoharu, to Murata Manufacturing Co., Ltd. Dielectric filter. 4,800,347, Cl. 333-202.000.
Yoshida Industry Co., Ltd.: *See*—
Okojima, Sumio; and Yuhara, Yukitomo, 4,799,604, Cl. 220-260.000.
Yoshida Kogyo K. K.: *See*—
Horikawa, Yoichi, 4,799,313, Cl. 29-768.000.
Matoba, Hiroshi, 4,799,298, Cl. 24-140.000.
Ohfusa, Masaatsu, 4,799,515, Cl. 139-384.00B.
Taga, Yukio, 4,799,611, Cl. 227-18.000.
Toishi, Yoshiyuki, 4,799,612, Cl. 227-121.000.
Yoshida, Makoto: *See*—
Izaki, Teruaki; Yoshida, Makoto; Osawa, Masami; Higuchi, Seijun; and Maruta, Akinori, 4,800,134, Cl. 428-626.000.
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, to Japan Atomic Energy Research Institute; Keizo Shida; and Takeda Chemical Indus. Ltd. Slow-release composite and process for producing the same. 4,800,085, Cl. 424-462.000.
Yoshikawa, Kunihiko: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.
Yoshikawa, Sumio: *See*—
Shimizu, Masayuki; and Yoshikawa, Sumio, 4,800,275, Cl. 250-317.100.
Yoshino, Motoaki, to Canon Kabushiki Kaisha. Data communication apparatus adapted to perform data communication and speech communication. 4,800,439, Cl. 358-257.000.
Yoshino, Nobuo, to Nihon Metal Gasket Kabushiki Kaisha. Metallic gasket. 4,799,695, Cl. 277-231.000.
Yoshioka, Kimitomo: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,800,201, Cl. 514-230.800.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.
Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, to Hitachi, Ltd. Semiconductor laser device having high optical intensity and reliability. 4,800,565, Cl. 372-45.000.
Yoshizawa, Shigeo; and Ishii, Eiichi, to NEC Corporation. Pulse count type FM demodulator. 4,800,338, Cl. 329-103.000.
Younes, Usama E., to Arco Chemical Company. Method for the preparation of rigid cast or transfer molded thermoset polyurethane modified polyisocyanurate compositions. 4,800,058, Cl. 264-328.400.
Young, Donald R., to Young, Donald R.; and Young, Ruth L. Combination medication applicator and pet grooming. 4,799,456, Cl. 119-83.000.
Young, Ruth L.: *See*—
Young, Donald R., 4,799,456, Cl. 119-83.000.

Younghans, James L.: *See*—
Lahti, Daniel J.; and Younghans, James L., 4,799,633, Cl. 244-130.000.
Yu, Ruey J.; and Bormann, Alan R., to Motorola, Inc. Output buffer for improving di/dt. 4,800,298, Cl. 307-443.000.
Yuge, Shizuo: *See*—
Ueda, Hideaki; Yuge, Shizuo; and Konishi, Katsutoshi, 4,800,144, Cl. 430-58.000.
Yuhara, Yukitomo: *See*—
Okojima, Sumio; and Yuhara, Yukitomo, 4,799,604, Cl. 220-260.000.
Yuhda, Sadayuki, to Sankin Kogyo Kabushiki Kaisha. Anaerobic germiculture receptacle. 4,800,156, Cl. 435-296.000.
Yukawa, Yoshimi; and Wakabayashi, Seiichi, to Yazaki Corporation. Winding of noise suppressing high tension resistive electrical wire. 4,800,359, Cl. 338-214.000.
Yukino, Hiroyasu, to Yanmar Diesel Engine Co., Ltd. Device for mounting an implement on a tractor. 4,799,563, Cl. 180-14.400.
Yunan, Malak E., to Explosives Technologies International Inc. Explosive primer unit for instantaneous initiation by low-energy detonating cord. 4,799,428, Cl. 102-322.000.
Yuter, Seymour C. Telephone console for restaurant tables. 4,800,438, Cl. 358-254.000.
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., to Tandem Computers Incorporated. Electrical keying for replaceable modules. 4,800,462, Cl. 361-413.000.
Zarobila, Clarence J.: *See*—
Freal, James B.; Zarobila, Clarence J.; and Davis, Charles M., 4,800,267, Cl. 250-227.000.
Zaruba, John V.: *See*—
Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., 4,799,678, Cl. 273-1.00E.
Zatko, David A.; and Maguire, John F., to Manufacturers Engineering Equipment Corp. Low level moisture measurement system and method. 4,800,000, Cl. 204-1.00T.
Zellweger, Max. Device for warming the foot of a wearer. 4,799,319, Cl. 36-2.600.
Zenith Electronics Corporation: *See*—
Davila, Fernando E.; and Schmid, Richard G., 4,800,335, Cl. 324-158.00F.
Zenyaku Kogyo Kabushiki Kaisha: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,800,201, Cl. 514-230.800.
Zerbe, Horst. Pharmaceutical product in the form of a pellet with continuous, delayed medicament substance emission. 4,800,084, Cl. 424-458.000.
Ziegler, Steven M. Knife support and cutting guide. 4,799,315, Cl. 30-293.000.
Zimmer, Herbert, to Dornier GmbH. Helicopter rotor blade control. 4,799,859, Cl. 416-20.00R.
Zimmerman, Albert H.; and Badcock, Charles C., to Aerospace Corporation, The. Apparatus and method for preventing degradation of nickel hydrogen cells and batteries. 4,800,140, Cl. 429-48.000.
Zmijewski, Milton J., Jr.: *See*—
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.
Zolnowsky, John: *See*—
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.
Zurcher, Urs: *See*—
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, 4,800,481, Cl. 363-70.000.
Zwagerman, Jay A.: *See*—
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., 4,800,462, Cl. 361-413.000.
501 Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko, 4,800,280, Cl. 250-339.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advantest Corporation: *See*—
Hayashi, Mishio, Re. 32,845, Cl. 324-77.00R.

Bingham, Garrick R., to Green & Bingham Limited. Liquid spray jet assembly and a mineral mining machine cutting head incorporating such assembly. Re. 32,840, Cl. 239-600.000.

Green & Bingham Limited: *See*—
Bingham, Garrick R., Re. 32,840, Cl. 239-600.000.

Hayashi, Mishio, to Advantest Corporation. Period and frequency measuring instrument. Re. 32,845, Cl. 324-77.00R.

Hitachi, Ltd.: *See*—
Saito, Cyuichi; and Sato, Yoshihiko, Re. 32,839, Cl. 198-335.000.

Horowitz, Justin. Canoe caddy. Re. 32,844, Cl. 280-641.000.

Martin Marietta Energy Systems, Inc.: *See*—
Wei, George C., Re. 32,843, Cl. 501-95.000.

Mulder, Douglas C., to Nordson Corporation. Apparatus for transferring powder from bulk drums. Re. 32,841, Cl. 406-134.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Suzuki, Hideo, Re. 32,838, Cl. 84-1.240.

Nordson Corporation: *See*—
Mulder, Douglas C., Re. 32,841, Cl. 406-134.000.

Saito, Cyuichi; and Sato, Yoshihiko, to Hitachi, Ltd. Balustrade of passenger conveyor. Re. 32,839, Cl. 198-335.000.

Sato, Yoshihiko: *See*—
Saito, Cyuichi; and Sato, Yoshihiko, Re. 32,839, Cl. 198-335.000.

Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments. Re. 32,838, Cl. 84-1.240.

Wei, George C., to Martin Marietta Energy Systems, Inc. Silicon carbide whisker reinforced ceramic composites and method for making same. Re. 32,843, Cl. 501-95.000.

Wiogda, Luis L. Arbitration of tennis by change of colors. Re. 32,842, Cl. 273-31.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

American Cyanamid Co.: *See*—
Giglia, Robert D.; and Battistelli, Edward A., B1 4,565,727, Cl. 428-172.000.

Artz, Steven P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. B1 4,678,498, 1-24-89, Cl. 71-87.000.

Atkin, John; and Loustau, Marie-Therese, to Societe Anonyme Dite: SAFT. Method of manufacturing an electrode for an electrochemical cell, and an electrode manufactured by the method. B1 4,514,473, 1-24-89, Cl. 429-221.000.

Battistelli, Edward A.: *See*—
Giglia, Robert D.; and Battistelli, Edward A., B1 4,565,727, Cl. 428-172.000.

Casio Computer Co., Ltd.: *See*—
Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, B1 4,667,556, Cl. 84-1.010.

Dorr, Irene M. Barrette with swiveled hinge. B1 3,998,233, 1-24-89, Cl. 132-48.00A.

Du Pont de Nemours, E. I., and Company: *See*—
Artz, Steven P., B1 4,678,498, Cl. 71-87.000.

Eventoff, Franklin N. Electronic pressure sensitive transducer apparatus. B1 4,314,227, 1-24-89, Cl. 338-99.000.

Ford Motor Company: *See*—
Johnson, Robert C.; Perry, David L.; and Peitsch, Bernd E., B1 4,634,971, Cl. 324-133.000.

General Electric Company: *See*—
Roemer, Peter B.; and Hickey, John S., B1 4,737,716, Cl. 324-319.000.

Giglia, Robert D.; and Battistelli, Edward A., to American Cyanamid Co. Non-woven activated carbon fabric. B1 4,565,727, 1-24-89, Cl. 428-172.000.

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DiFrank, Frank J. Bag support. 299,575, 1-24-89, Cl. D34-6.000.

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Donato, Anthony C., to Lightolier Incorporated. Spotlight. 299,553, 1-24-89, Cl. D26-63.000.

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Gould, Murray J. Manipulable puzzle. 299,499, 1-24-89, Cl. D21-104.000.

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Howze, Joseph K. Exercise bench. 299,501, 1-24-89, Cl. D21-191.000.

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Lee, Anthony L. Cutting attachment for a lawn and weed trimmer. 299,484, 1-24-89, Cl. D8-8.000.
Lee, Evelyn. Arm protector. 299,562, 1-24-89, Cl. D29-20.000.
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Macaluso, Anthony F. Combined courtesy and adjustable light for the interior of automotive vehicles. 299,549, 1-24-89, Cl. D26-29.000.
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Hellman, Wayne R.; and Wiley, Emmett H., 299,547, Cl. D26-2.000.
Willingham, Sybil E. Cage. 299,567, 1-24-89, Cl. D30-116.000.
Wilson, Jordan E. Combined trash containers and cart therefor. 299,578, 1-24-89, Cl. D34-25.000.
Wong, Fu K., to Motor Electric Manufacturing Co., Ltd. Nail dryer. 299,559, 1-24-89, Cl. D28-58.000.
Wood, Nelson. Sombrero ring. 299,489, 1-24-89, Cl. D11-30.000.
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Nasui, Sadao; and Yajima, Takeo, 299,526, Cl. D23-338.000.
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Yost, Holly K., to Price Pfister, Inc. Faucet. 299,518, 1-24-89, Cl. D23-241.000.

LIST OF PLANT PATENTEES

Ball Pan Am Plant Co.: *See*—
Hesse, Peter S., 6,551, Cl. 78.000.
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Bringhurst, Royce S.; and Voth, Victor, to University of California, Regents of the. Strawberry plant called 'Muir'. 6,558, 1-24-89, Cl. 49.000.
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Goldsberry, Kenneth L., 6,553, Cl. 71.000.
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Holtkamp, Reinhold, Sr., 6,550, Cl. 69.000.
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Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant Maroon Bells. 6,554, 1-24-89, Cl. 73.000.
Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant Crestone. 6,555, 1-24-89, Cl. 70.000.
Hesse, Peter S., to Ball Pan Am Plant Co. Chrysanthemum plant named 24-Karat. 6,551, 1-24-89, Cl. 78.000.
Hesse, Peter S., to Ball Pan Am Plant Co. Chrysanthemum plant named Majestic. 6,552, 1-24-89, Cl. 76.000.
Hesse, Peter S., to Ball Pan Am Plant Co. Chrysanthemum plant named Amethyst. 6,562, 1-24-89, Cl. 76.000.
Hesse, Peter S., to Ball Pan Am Plant Co. Chrysanthemum plant named Tangelo. 6,563, 1-24-89, Cl. 74.000.
Holtkamp, Reinhold, Sr., to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara" . African violet plant named Lanai. 6,549, 1-24-89, Cl. 69.000.
Holtkamp, Reinhold, Sr., to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara" . African violet plant named Gisela. 6,550, 1-24-89, Cl. 69.000.
Jolly, Nelson F. Miniature rose plant named 'Arizona Sunset'. 6,559, 1-24-89, Cl. 7.000.
Jolly, Nelson F. Miniature rose plant named 'Swinger'. 6,560, 1-24-89, Cl. 7.000.
Jolly, Nelson F. Miniature rose plant named 'Proud Heritage'. 6,561, 1-24-89, Cl. 10.000.
McRae, Edward A., to Melridge, Inc. Lily plant named Charleston. 6,556, 1-24-89, Cl. 68.000.
McRae, Edward A., to Melridge, Inc. Lily plant named 'Crimson Pixie'. 6,557, 1-24-89, Cl. 68.000.
Melridge, Inc.: *See*—
McRae, Edward A., 6,556, Cl. 68.000.
McRae, Edward A., 6,557, Cl. 68.000.
Post, Joachim, to Fides Beheer B.V. Kalanchoe plant named Helgoland. 6,564, 1-24-89, Cl. 68.000.
University of California, Regents of the: *See*—
Bringhurst, Royce S.; and Voth, Victor, 6,558, Cl. 49.000.
Voth, Victor: *See*—
Bringhurst, Royce S.; and Voth, Victor, 6,558, Cl. 49.000.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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11 4,799,738

CLASS 303

15 4,799,740
60 4,799,741
115 4,799,742
119 4,800,289

CLASS 307

43 4,800,290
87 4,800,291
117 4,800,292
4,800,293
263 4,800,294
273 4,800,295
279 4,800,300
291 4,800,296
296 R 4,800,297
308 4,800,299
362 4,800,301
441 4,800,302
443 4,800,298
450 4,800,303
602 4,800,304

CLASS 310

51 4,800,306
67 R 4,800,307
83 4,800,308
90 4,800,309
105 4,800,310
178 4,800,311
239 4,800,312
242 4,800,313
260 4,800,314
261 4,800,315
327 4,800,316
334 4,800,317

CLASS 312

228 4,799,743
229 4,799,744

CLASS 313

414 4,800,318
487 4,800,319
625 4,800,320
639 4,800,321

CLASS 315

5.39 4,800,322
219 4,800,323

CLASS 318

293 4,800,324
661 4,800,325
729 4,800,326
798 4,800,327

CLASS 320

2 4,800,328

CLASS 323

242 4,800,329
243 4,800,330
277 4,800,331

CLASS 324

73 R 4,800,332
77 R Re.32,845
133 B1 4,634,971
142 4,800,333
158 F 4,800,335
158 MG 4,800,334
319 B1 4,737,716
426 4,800,336
455 4,800,337

CLASS 329

103 4,800,338

CLASS 330

253 4,800,339

CLASS 331

1 A 4,800,340
2 4,800,341
10 4,800,342

CLASS 333

24 C 4,800,343
25 4,800,344
111 4,800,345
140 4,800,346
202 4,800,347
4,800,348
208 4,800,349
237 4,800,351
239 4,800,350

CLASS 335

132 4,800,352
210 4,800,353
216 4,800,354
301 4,800,355

CLASS 336

184 4,800,356
198 4,800,357

CLASS 337

268 4,800,358

CLASS 338

99 B1 4,314,227
214 4,800,359
280 4,800,443

CLASS 340

52 R 4,800,360
63 4,800,361
72 4,800,377
78 4,800,362
310 A 4,800,363
524 4,800,366
526 4,800,367
567 4,800,368
572 4,800,369
573 4,800,370
593 4,800,371
625 4,800,372
626 4,800,373
649 4,800,374
703 4,800,375
721 4,800,376
722 4,800,378
731 4,800,379
750 4,800,380
764 4,800,381
784 4,800,382
825.520 4,800,384
825.79 4,800,383
854 4,800,385

CLASS 341

119 4,800,365
131 4,800,364

CLASS 342

61 4,800,386
165 4,800,387
175 4,800,389
194 4,800,388
383 4,800,390
389 4,800,391

CLASS 343

700 MS 4,800,392
821 4,800,393
882 4,800,394
895 4,800,395

CLASS 346

1.1 4,800,396
4,800,397
75 4,800,398
76 PH 4,800,399
107 R 4,800,400
108 4,800,401
139 R 4,800,402
140 R 4,800,403

CLASS 350

1.7 4,799,745
3.6 4,799,746
3.7 4,799,739
6.8 4,799,747
96.10 4,799,748
96.13 4,799,749
4,799,750
96.15 4,799,751
4,799,752
96.18 4,799,753
4,799,754
4,799,755
4,799,756
96.2 R 4,799,758
96.20 4,799,757
96.21 4,799,759
96.23 4,799,760
96.31 4,799,761
96.34 4,799,762
137 4,799,763
162.18 4,799,764
174 4,799,765
252 4,799,766
269 4,799,767
279 4,799,768
331 R 4,799,769
4,799,770
334 4,799,771
339 R 4,799,772
342 4,799,773
346 4,799,774
350 S 4,799,775
4,799,776
358 4,799,777
452 4,799,778
585 4,799,779
600 4,799,780

CLASS 351

86 4,799,781
118 4,799,782
206 4,799,783
212 4,799,784
4,799,785
243 4,800,404

CLASS 354

86 4,800,405
105 4,800,406
114 4,800,407
322 4,800,408
402 4,800,409
408 4,800,410

CLASS 355

3 DD 4,800,411
4,800,412
45 4,800,413
58 4,800,414

CLASS 356

30 4,799,786
43 4,799,787
45 4,799,788
73.1 4,799,789
4,799,790
121 4,799,791
124 4,799,792
127 4,799,793
246 4,799,794
310 4,799,795
336 4,799,796
345 4,799,797
374 4,799,798
446 4,799,799

CLASS 357

34 4,800,415
4,800,416
59 4,800,417
68 4,800,418
70 4,800,419
76 4,800,420
80 4,800,421
82 4,800,422

CLASS 358

21 R 4,800,423
98 4,800,424
136 4,800,425
141 4,800,426
4,800,427
142 4,800,428
148 4,800,429
160 4,800,430
4,800,431
4,800,432
168 4,800,433
190 4,800,434
213.19 4,800,435

232 4,800,436
244 4,800,437
254 4,800,438
257 4,800,439
260 4,800,440
261.1 4,800,441
280 4,800,442
294 4,800,444
342 4,800,445
343 4,800,446

CLASS 360

10.3 4,800,447
35.1 4,800,448
71 4,800,449
73.06 4,800,450
74.2 4,800,451
78.14 4,800,452
99.02 4,800,453
103 4,800,454
104 4,800,455
109 4,800,456
113 4,800,457
135 4,800,458

CLASS 361

321 4,800,459
340 4,800,460
398 4,800,461
413 4,800,462
424 4,800,463
4,800,464
432 4,800,465

CLASS 362

26 4,800,466
61 4,800,467
4,800,468
72 4,800,469
73 4,800,470
80 4,800,471
158 4,800,472
217 4,800,473
293 4,800,474
294 4,800,475

CLASS 363

16 4,800,476
17 4,800,477
41 4,800,478
48 4,800,479
60 4,800,480
70 4,800,481

CLASS 364

140 4,800,482
200 4,800,483
4,800,484
4,800,485
4,800,486
4,800,487
4,800,488
4,800,489
4,800,490
4,800,491
403 4,800,492
405 4,800,493
413.03 4,800,495
413.13 4,800,494
422 4,800,496
424.1 4,800,497
426.02 4,800,498
431.03 4,800,499
431.08 4,800,500
453 4,800,501
467 4,800,502
470 4,800,503
478 4,800,504
4,800,505
4,800,506
484 4,800,507
4,800,508
492 4,800,509
521 4,800,510
4,800,511
551.01 4,800,512
571.02 4,800,513
715.07 4,800,514
746.1 4,800,515
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757 4,800,517
819 4,800,518
822 4,800,519
900 4,799,635
4,800,520
4,800,521
4,800,522
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4,800,524

CLASS 365

72 4,800,525
118 4,800,526
182 4,800,527
185 4,800,528
189 4,800,529
4,800,530
190 4,800,552
222 4,800,531
226 4,800,532
228 4,800,533
230 4,800,535
233 4,800,534

CLASS 366

78 4,800,536
255 4,799,801
296 4,799,800

CLASS 367

35 4,800,537
55 4,800,538
72 4,800,539
87 4,800,540
154 4,800,542
424 4,800,541

CLASS 368

10 4,800,543
69 4,800,544
190 4,800,545

CLASS 369

44 4,800,546
45 4,800,547
54 4,800,548
56 4,800,549
59 4,800,550
67 4,800,305
77.1 4,800,551
263 4,800,553
291 4,800,554

CLASS 370

3 4,800,555
4,800,556
4,800,557
67 4,800,558
94 4,800,559
104 4,800,560
4,800,561

CLASS 371

5 4,800,562
13 4,800,563
61 4,800,564

CLASS 372

45 4,800,565
73 4,800,566
87 4,800,567
99 4,800,568
4,800,569

CLASS 375

4 4,800,570
10 4,800,571
14 4,800,572
4,800,573
26 4,800,574
80 4,800,575
83 4,800,576
115 4,800,577
116 4,800,578

CLASS 376

202 4,800,060
261 4,800,061
272 4,800,062
316 4,800,063

CLASS 377

60 4,800,579

CLASS 378

71 4,800,580
143 4,800,581

CLASS 379

67 4,800,583
216 4,800,582
355 4,800,584
364 4,800,585
399 4,800,586
412 4,800,588
413 4,800,589
437 4,800,587

CLASS 380

25 4,800,590

CLASS 382

50 4,800,591

CLASS 384

19 4,799,802
43 4,799,803
44 4,799,804
4,799,805
45 4,799,806
462 4,799,807
481 4,799,808
522 4,799,809
606 4,799,810

CLASS 400

279 4,799,811
616 4,799,812
629 4,799,813
639.1 4,799,814

CLASS 401

132 4,799,815

CLASS 403

2 4,799,816
57 4,799,817
107 4,799,818
252 4,799,819

CLASS 404

100 4,799,820

CLASS 405

46 4,799,822
115 4,799,821
146 4,799,824
180 4,799,823
188 4,799,825
191 4,799,826
195 4,799,827
4,799,828
4,799,829

CLASS 406

117 4,799,830
134 Re.32,841
136 4,799,831

CLASS 408

123 4,799,832
132 4,799,833
200 4,799,834

CLASS 409

138 4,799,836
219 4,799,835
232 4,799,837
234 4,799,838
244 4,799,839

CLASS 410

42 4,799,840

CLASS 411

55 4,799,841
171 4,799,842
414 4,799,844
542 4,799,845

CLASS 413

66 4,799,846

CLASS 414

331 4,799,843
347 4,799,848
462 4,799,849
687 4,799,850
700 4,799,851
724 4,799,852
730 4,799,853
737 4,799,854
790.8 4,799,847

CLASS 415

143 4,799,855
155 4,799,856
185 4,799,857

CLASS 416

20 R 4,799,859
110 4,799,858
119 4,799,860
186 R 4,799,861
242 4,799,862

CLASS 417

7 4,799,864
84 4,799,863
283 4,799,865
415 4,799,866

CLASS 418

1 4,799,867
36 4,799,868
97 4,799,869
151 4,799,870

CLASS 419

36 4,800,064

CLASS 420

129 4,800,065

CLASS 421

448 4,800,128

CLASS 422

55 4,800,066
86 4,800,067
173 4,800,068

CLASS 423

97 4,800,069
210.5 4,800,070
321 R 4,800,071
396 4,800,072
588 4,800,073
4,800,074
4,800,075

CLASS 424

69 4,800,076
70 4,800,077
74 4,800,080
86 4,800,078
129 4,800,081
409 4,800,082
457 4,800,083
458 4,800,084
462 4,800,085
482 4,800,079
497 4,800,086
4,800,087

CLASS 425

38 4,799,871
63 4,799,872
73 4,799,873
131.1 4,799,874
329 4,799,875
536 4,799,876

CLASS 426

3 4,800,091
46 4,800,093
69 4,800,088
4,800,092
78 4,800,089
243 4,800,090
513 4,800,094
548 4,800,095
577 4,800,096
632 4,800,097
637 4,800,098
641 4,800,099

CLASS 427

38 4,800,100
142 4,800,101
197 4,800,102
221 4,800,103
230 4,800,104
253 4,800,105
388.1 4,800,106
421 4,800,107

CLASS 428

34.9 4,800,109
43 4,800,108
4,800,110
121 4,800,111
163 4,800,112
172 B1 4,565,727
175 4,800,113
4,800,114
178 4,800,115
215 4,800,116
260 4,800,117
270 4,800,118
283 4,800,119
286 4,800,120
364 4,800,121
391 4,800,124
405 4,800,125
412 4,800,122
420 4,800,126
424.2 4,800,123
447 4,800,127
474.4 4,800,129
517 4,800,130
552 B1 4,101,703
558 4,800,131
560 4,800,132
606 4,800,133
626 4,800,134
653 4,800,135
690 4,800,136
698 4,800,137

CLASS 429

19 4,800,138
42 4,800,139
48 4,800,140
116 4,800,141
130 4,800,142
153 4,800,143
221 B1 4,514,473

CLASS 430

58 4,800,144
4,800,145
73 4,800,146
125 4,800,147
138 4,800,148
4,800,149
264 4,800,150
270 4,800,151
4,800,152
380 4,800,153
570 4,800,154

CLASS 431

153 4,799,877
202 4,799,878
328 4,799,879

CLASS 432

13 4,799,880
77 4,799,881

CLASS 433

6 4,799,884
8 4,799,882
17 4,799,883
95 4,799,885
176 4,799,886
212.1 4,799,887
215 4,799,888

CLASS 434

112 4,799,889
304 4,799,890

CLASS 435

7 4,800,155
71 4,800,157
172.1 4,800,158
172.3 4,800,159
177 4,800,160
233 4,800,161
280 4,800,162
287 4,800,163
296 4,800,156
300 4,800,164

CLASS 436

6 4,800,165
55 4,800,166
66 4,800,167
124 4,800,168
166 4,800,169

CLASS 437

24 4,800,170
31 4,800,171
51 4,800,172
101 4,800,174
160 4,800,175
193 4,800,176
4,800,177
203 4,800,179
206 4,800,178

CLASS 439

43 4,799,891
72 4,799,892
76 4,799,893
92 4,799,894
183 4,799,895
232 4,799,896
264 4,799,897
418 4,799,898
502 4,799,899
585 4,799,900
4,799,902
620 4,799,901
696 4,799,903
733 4,799,904

CLASS 440

89 4,799,905

CLASS 441

42 4,799,907
85 4,799,906
115 4,799,908
131 4,799,910

CLASS 445

14 4,799,911
26 4,799,912

CLASS 446

193 4,799,913
225 4,799,914
279 4,799,915
444 4,799,916
450 4,799,917

CLASS 474

161 4,799,918
168 4,799,909
205 4,799,919

CLASS 494

23 4,799,920

CLASS 501

88 4,800,180
89 4,800,181
92 4,800,182
95 Re.32,843
96 4,800,183
140 4,800,184

CLASS 502

26 4,800,185
33 4,800,186
64 4,800,187
159 4,800,188
400 4,800,189
416 4,800,190

CLASS 503

200 4,800,192
217 4,800,193

CLASS 514

15 4,800,191
89 4,800,194
150 4,800,195
159 4,800,196
162 4,800,197
167 4,800,198
202 4,800,199
211 4,800,200
227 4,800,202
230.8 4,800,201
248 4,800,203
267 4,800,204
332 4,800,206
346 4,800,205
397 4,800,208
401 4,800,209
413 4,800,207
424 4,800,212
443 4,800,211
616 4,800,213
643 4,800,235

CLASS 521

84.1 4,800,214

CLASS 523

414 4,800,215

CLASS 525

163 4,800,217
285 4,800,216
413 4,800,219
433 4,800,218

CLASS 526

238.23 4,800,220

CLASS 528

10 4,800,221
94 4,800,222

CLASS 544

354 4,800,223

CLASS 546

12 4,800,224
112 4,800,225
338 4,800,226

CLASS 548

543 4,800,227

CLASS 549

470 4,800,228

CLASS 558

92 4,800,229
388 4,800,230

CLASS 560

176 4,800,231

CLASS 564

227 4,800,232

CLASS 568

447 4,800,233
842 4,800,234

CLASS 604

51 4,799,921
74 4,799,922
179 4,799,923
181 4,799,924
4,799,925
187 4,799,926
192 4,799,927
329 4,799,928
331 4,799,929

CLASS 623

2 4,799,930
5 4,799,931

CLASSIFICATION OF DESIGNS

D3—	61	299,480		41	299,497			299,514	D24—	1.1	299,531		29	299,548			299,564
D6—	569	299,481		104	299,499	D23—	200	299,516		18	299,532			299,549	D30—	102	299,565
D7—	70	299,482		111	299,498		235	299,517		21	299,533		42	299,550		109	299,566
D8—	1	299,483		157	299,500		241	299,518		45	299,534		63	299,551		116	299,567
	8	299,484		191	299,501		242	299,519		48	299,535			299,552		124	299,568
	323	299,485			299,502		245	299,520		51	299,536			299,553	D32—	8	299,569
	341	299,486			299,503			299,521			299,537		69	299,554		15	299,570
		299,487		194	299,504		250	299,515		53	299,538			299,555			299,571
D9—	307	299,488		220	299,505		261	299,522		64	299,539		96	299,556		70	299,572
D11—	30	299,489	D22—	117	299,506		283	279,523	D25—	5	299,540		106	299,557			299,573
D12—	162	299,490			299,507		314	299,524		17	299,541	D28—	7	299,558	D34—	6	299,574
	188	299,491		133	299,508		336	299,525			299,542		58	299,559			299,575
D14—	100	299,495		140	299,509		338	299,526		35	299,543		64	299,560		7	299,576
	118	299,494			299,510		344	299,527		52	299,544		78	299,561		21	299,577
	138	299,493			299,511		351	299,528		57	299,545	D29—	20	299,562		25	299,578
	240	299,492		141	299,512		373	299,529		119	299,546		22	299,563	D99—	27	299,579
D21—	24	299,496		142	299,513		374	299,530	D26—	2	299,547						

CLASSIFICATION OF PLANTS

P.—	7	6,559		49	6,558			6,564		70	6,555		74	6,563			6,562
		6,560		68	6,556		69	6,549		71	6,553						
	10	6,561			6,557			6,550		73	6,554		76	6,552		78	6,551

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,799,613
4,800,118
4,800,470
4,800,575
02 : 4,799,554
4,799,782
04 : 4,799,392
4,799,451
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4,799,821
4,800,101
4,800,323
4,800,365
4,800,375
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4,800,514
06 : 4,799,277
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